April 8, 2024

Honorable Mike Causey
Commissioner of Insurance
North Carolina Department of Insurance
Raleigh, NC 27699

Re: Revision of Mobile Homeowners MH(F) Insurance Rates

Dear Commissioner Causey:

The North Carolina Rate Bureau, on behalf of all member companies, is filing revised premium rates and factors for Mobile Homeowners MH(F) insurance, which is one of two available mobile homeowners insurance programs, the other being Mobile Homeowners MH(C) insurance.

The enclosed memoranda, exhibits, and testimony show and explain the calculations for rate level changes to achieve the full rate indication over a three-year period, as follows:

Form	Change effective 11/1/2024	Change effective 11/1/2025	Change effective 11/1/2026
Owners	24.9%	21.2%	21.0%
Tenants	24.8%	13.9%	13.6%
Total: All Forms	**24.9%**	**21.2%**	**20.9%**

The Rate Bureau proposes this three-year approach to mitigate the impact on policyholders. The rate indications reflect that the current approved rates are not expected to cover the full costs of coverage going forward. The indications also reflect significant increases to the price insurers pay for reinsurance, which is essential for insurers to be able to do business in North Carolina.

The Mobile Homeowners MH(F) program is divided into 6 territory groups across the state, and the filing shows the revised rate levels and revised windstorm and hail exclusion credits, both varying by territory group.
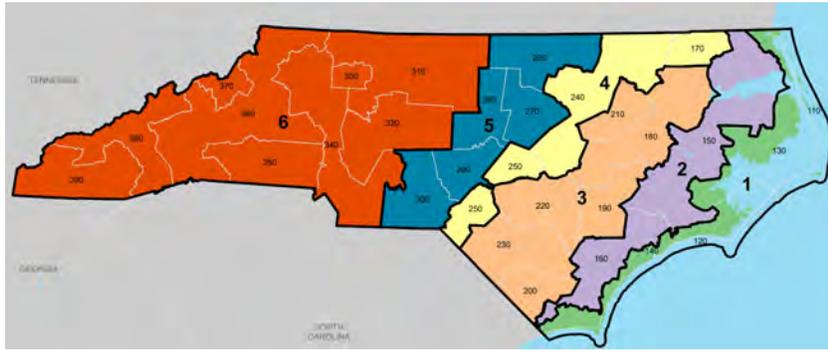
The Rate Bureau calculated these changes based on the current rates in force, and the new rates consider the data and factors specified in the North Carolina statutes (G.S. 58-36-10(2) and G.S. 58-36-10(7)) and presented in the filing.

The filing includes information and data required by statute and regulation (G.S. 58-36-15 and 11 NCAC 10.1105) in Section E. Additionally, the pre-filed written testimony of (a) Joanna Biliouris, General Manager; (b) Paul Anderson, Milliman; (c) Minchong Mao, Aon; and (d) Dr. George Zanjani, University of Alabama are submitted with this filing.

We propose that the revised rates become effective according to the following rule of application:

> The Year 1 changes are applicable to all new and renewal policies becoming effective on or after November 1, 2024. The Year 2 changes are applicable to all new and renewal policies becoming effective on or after November 1, 2025. The Year 3 changes are applicable to all new and renewal policies becoming effective on or after November 1, 2026.

Your approval of these changes is respectfully requested.

Sincerely,

Joanna Biliouris
General Manager

North Carolina Mobile Homeowners
MH(F) Program

Explanatory Memorandum

This memorandum has been prepared in support of the North Carolina Rate Bureau's ("NCRB") proposed revision to the North Carolina Mobile Homeowners MH(F) program. The rate indications developed in this analysis are based on an assumed effective date of October 1, 2024 and the assumption that rates will be in effect for one year. However, based on the submission date of this filing, and in order to mitigate the effect of the rate increase on policyholders, the Rate Bureau elected to spread the proposed rate change over three years, with a proposed effective date of November 1, 2024 for the year 1 change, an effective date of November 1, 2025 for the year 2 change, and an effective date of November 1, 2026 for the year 3 change.

Note that Mobile Homeowners MH(F) policies provide flood coverage, including coverage for both inland flood and storm surge. Accordingly, the analysis underlying this rate filing includes both types of flood losses.

In this filing, the term "hurricane losses" refers to losses identified as being caused by a hurricane and is intended to include hurricane wind losses and storm surge flood losses. The term "catastrophe" generally refers to all losses identified as being caused by a catastrophe, including but not limited to hurricane, inland flood, and non-hurricane windstorm losses.

Premium, Loss, and Expense Experience

This proposed revision is based on the combined premium and loss experience of all licensed companies writing Mobile Homeowners MH(F) insurance in North Carolina, except as noted in *Section E, Supplemental Information*.

The rate indication and rating plan analysis included in this filing were performed using data for calendar/accident years 2018 through 2022 provided by all member companies writing Mobile Homeowners MH(F) insurance in North Carolina. The data provided by member companies was collected and combined by Milliman, Inc. (Milliman) at the direction of the North Carolina Rate Bureau. The data was reviewed by Milliman for reasonability and consistency. In this filing, the above-mentioned data will be referred to as the "data provided by member companies." More information regarding the data editing procedures used by Milliman can be found in *Section E, Supplemental Information*.

The data provided by member companies included both loss and allocated loss adjustment expenses (ALAE), and these items were combined for the purpose of this analysis. The terms "loss" and "losses", as used in this memorandum, represent losses and ALAE combined. Underwriting expenses, unallocated loss adjustment expenses, and deviations data used in the analysis were provided and reviewed by the North Carolina Rate Bureau.

Statewide Indicated Rate Changes

The overall statewide indicated rate changes were calculated separately for Owners and Tenants. The following describes the key elements of the statewide indications:

- **Loss Experience -** The Mobile Homeowners insurance experience for the MH(F) program was compiled on a calendar/accident year basis for the five-year period beginning with the year ending December 31, 2018 and continuing through the year ending December 31, 2022, the most recent period for which such experience is available. For each twelve-month period, the accident year experience reflects losses from accidents occurring during that period with the premiums and number of mobile home exposures "earned" during the same period. Since this filing utilizes modeled hurricane losses, the actual hurricane losses (which include wind losses and storm surge losses) have been removed from the loss experience used for the rate indications.

  The losses compiled for each accident year are incurred losses (i.e., paid losses plus outstanding case loss reserves).

- **Excess Wind Losses and Excess Wind Loss Factor –** Because hurricane and other large-scale wind loss events are highly volatile in nature, both hurricane models and an excess wind procedure were used to achieve stability and adequacy in the indicated rates. As a result, extreme shifts in the rates (either upward or downward) due to the occurrence or non-occurrence of hurricanes or other large wind losses will be avoided. The excess wind procedure used for non-hurricane wind losses is described below. Modeled hurricane losses are discussed in more detail later in this memorandum.

  Statewide excess wind losses are calculated for each accident year by first removing actual hurricane wind and storm surge losses and then determining an expected long-term ratio of wind losses relative to total non-hurricane losses excluding wind and flood losses. In determining the expected long-term ratio of wind losses to total non-hurricane losses excluding wind and flood losses, the historical ratios for accident years in which unusually large wind losses were incurred are capped at five times the median statewide wind-to-total-minus-wind-and-flood ratio.

  All losses in excess of this expected wind ratio are defined as excess wind losses. The ratio of wind losses to total non-hurricane losses excluding wind and flood losses for a given year is composed of two parts:

    (1) The capped excess wind loss ratio; and
    (2) The excess wind loss ratio above the cap.

  The resulting actual excess wind losses identified using the methodology above are then removed from the loss experience used in developing rates. The long-term impact of excess losses (i.e., losses not related to hurricanes and, therefore, not accounted for in the hurricane model) is accounted for in the rates through the use of an excess wind factor, which is calculated using the following formula:

  Excess Wind Loss Factor =
      1.0 + [(Average Capped Excess Wind Ratio + Average Excess Wind Ratio above the Cap) /
          (1.0 + Average Capped Wind Ratio - Average Capped Excess Wind Ratio)]

  The excess wind methodology for MH(F) Owners and Tenants combined can be found on *Section C, Page 28*.

  To determine excess wind losses for each MH(F) policy form, the total non-hurricane excess wind losses for each accident year were allocated based on the distribution of incurred wind losses by policy form (see *Section C, Page 29*).

- **Excess Flood Losses and Excess Flood Loss Factor** – Because flood loss events are also highly volatile in nature, an excess flood procedure was used to achieve stability and adequacy in the indicated rates. The excess flood procedure used was analogous to the excess wind procedure described above.

  Statewide excess flood losses are calculated for each accident year by first removing actual hurricane flood (i.e., storm surge) losses and then determining an expected long-term ratio of flood losses relative to total non-hurricane losses excluding wind and flood losses. In determining the expected long-term ratio of flood losses to total non-hurricane losses excluding wind and flood losses, the historical ratios for accident years in which unusually large flood losses were incurred are capped at five times the median statewide flood-to-total-minus-wind-and-flood ratio.

  All losses in excess of this expected flood ratio are defined as excess flood losses. The ratio of flood losses to total non-hurricane losses excluding wind and flood losses for a given year is composed of two parts:

  > (1) The capped excess flood loss ratio; and
  > (2) The excess flood loss ratio above the cap.

  The resulting actual excess flood losses identified using the methodology above are then removed from the loss experience used in developing rates. The long-term impact of excess losses (i.e., losses not related to hurricanes and, therefore, not accounted for in the hurricane model) is accounted for in the rates through the use of an excess flood factor, which is calculated using the following formula:

  Excess Flood Loss Factor =
  > 1.0 + [(Average Capped Excess Flood Ratio + Average Excess Flood Ratio above the Cap) / (1.0 + Average Capped Flood Ratio - Average Capped Excess Flood Ratio)]

  The excess flood methodology for MH(F) Owners and Tenants combined can be found on *Section C, Page 30*.

  To determine excess flood losses for each MH(F) policy form, the total non-hurricane excess flood losses for each accident year were allocated based on the distribution of incurred flood losses by policy form (see *Section C, Page 31*).

- **Loss and Claim Development** – To develop the incurred Mobile Homeowners losses and reported claims to ultimate, cumulative loss development factors (LDFs) and cumulative claim development factors (CDFs) are applied to incurred losses and reported claims, respectively. To derive these factors, Mobile Homeowners loss and claim triangles were constructed using data provided by member companies. These triangles for MH(F) Owners and MH(F) Tenants were aggregated and evaluated on a combined basis. Using these aggregate triangles, age-to-age LDFs and CDFs were selected and age-to-ultimate LDFs and CDFs were calculated (see *Section C, Pages 32 and 33*).

- **Unallocated Loss Adjustment Expenses (ULAE)** – The incurred losses used in the rate indication do not include ULAE. To account for these expenses, the incurred losses were multiplied by a ULAE factor selected based on five years of historical incurred ULAE-to-incurred loss & ALAE ratios provided by the North Carolina Rate Bureau. During 2022, one of the member companies transferred its mobile homeowners MH(F) policies to the MH(C) policy form. As a result, in order to determine expense provisions that accurately reflect the expected future distribution of member companies, the historical expense data was restated to reflect the member companies currently

writing MH(F) policies. A separate selected catastrophe LAE factor was applied to the modeled hurricane losses (see *Section C, Page 47*). See the pre-filed testimony of M. Mao for support of the catastrophe LAE factor.

- **Loss Trend –** To trend losses, frequency and severity trends were selected by policy form based on six years of quarterly claims data provided by member companies.

  So as not to distort the indicated trends, historical catastrophe losses were removed from the loss and claim count data. Because catastrophe losses other than hurricane and flood were not explicitly identified in the data provided by member companies, weekly claim data was reviewed by peril (water and wind) in order to identify catastrophe events. For each peril, weeks during the experience period which had reported claim counts that were greater than two times the standard deviation of weekly reported claims were identified as having catastrophe events. The claims and losses for each peril that occurred during those weeks were excluded from the loss trend analysis.

  In order to evaluate trends, both claims and losses were developed to ultimate based on the cumulative claim and loss development factors discussed above. In order to apply these annual development factors to quarterly claims and losses, the factors were interpolated exponentially to derive quarterly development factors.

  In trending losses, a two-step trending procedure was used. Frequency and severity trend rates were selected by policy form separately for the experience trend period and the projection trend period. The experience trend period is defined as the first calendar accident day associated with the data provided by member companies, or January 1, 2018, up to and including the last calendar-accident day provided in the data provided by member companies, or December 31, 2022. The projection trend period is defined as the end date of the experience period, or December 31, 2022, up to the average accident date of the one-year policy period during which the rates are projected to be in effect, or October 1, 2025. Loss trend rates were then calculated for each policy form using the following formula:

  Loss Trend Rate = (1 + Frequency Trend Rate) x (1 + Severity Trend Rate) – 1.

  Loss trend factors were calculated by policy form for each accident year based on the selected loss trend rates and trend periods. For each accident year, the experience period is calculated as the amount of time from the average accident date within the accident year to the end of the experience period, or December 31, 2022. The projection period is calculated for all accident years as the amount of time from the end date of the experience period, or December 31, 2022, up to the average accident date of the one-year policy period during which the rates are projected to be in effect, or October 1, 2025.

  The selected frequency and severity trend rates, as well as the resulting loss (or pure premium) trend rates for each MH(F) policy form are shown in *Section C, Pages 35 and 36*. The calculation of the loss trend factors for each of the MH(F) policy forms is shown in *Section C, Page 34*. *Section C, Page 37* shows the interpolation of the cumulative development factors.

- **Exposure Trend –** Exposure trends were selected by policy form to account for changes in the amounts of insurance purchased by policyholders over time. The indicated exposure trend rates were calculated based on the average amount of insurance per policy (see *Section C, Page 38*). The selected exposure trends were applied to the data that Milliman provided to Aon to be used in the determination of modeled hurricane losses.

- **Premium Trend** – Premium trends were selected by policy form to account for changes in the average premium per policy over time. The indicated premium trend rates were calculated based on the average rating factors for each accident year and for each policy form.

  The historical average rating factors were used to calculate various estimates of the average annual change in premium. Similar to the loss trends, premium trend rates were selected separately for the experience period and the projection period (see *Section C, Page 40*). The experience trend period is defined as the first calendar accident day associated with the data provided by member companies, or January 1, 2018, up to and including the last calendar accident day in the data provided by member companies, or December 31, 2022. The projection trend period is defined as the end date of the experience period, or December 31, 2022, up to the average written date of the period during which the rates are projected to be in effect, or April 1, 2025.

  Following the selection of premium trend rates by policy form, premium trend factors were calculated for each accident year based on the selected premium trend rates and trend periods. For each calendar year, the experience period is calculated as the amount of time from the average written date within the calendar year to the end of the experience period, or December 31, 2022. The projection period is calculated for all calendar years as the amount of time from the end date of the experience period, or December 31, 2022, up to the average written date of the period during which the rates are projected to be in effect, or April 1, 2025 (see *Section C, Page 39*).

- **Average Rating Factors** – The rate indications included within this filing are calculated at a base class level. In order to convert the historical experience to a consistent base class level, average rating factors are used. The average rating factors represent the ratio of the average premium (earned premium at current manual rate level divided by the number of earned house years) and the average base class premium. Earned premiums at current manual rates are calculated using the extension of exposures method, which multiplies the rates in effect at the time of the review by the number of earned house years for each risk in the data provided by member companies. The current base class rate used in the rate indication is defined by the following policy characteristics for each MH(F) policy form:

Current MH(F) Base Class Definitions

Policy Form	Amount of Insurance	Deductible	Coverage	Tie-Down Credit
Owners	$25,000	$250	Broad Form	No
Tenants	$5,000	$250	Broad Form	No

  The policy characteristics of the current base class, which are used to convert the historical experience to a consistent level for the purposes of calculating indicated rate changes, are not necessarily the same as the base policy characteristics presented in the current MH(F) rate manual from which policyholder premiums are calculated.

- **Credibility** – Credibility of the historical experience was considered in several places throughout this filing, including in the determination of the total base class loss cost calculated for each policy form and each territory as well as in the selection of loss trends.

  To determine the credibility of the non-hurricane mobile homeowners loss costs for each policy form, a limited fluctuation credibility methodology was used, as explained in a CAS Proceedings Paper "*Credibility of the Pure Premium*" by Mayerson, Jones, and Bowers. This methodology assumes that loss costs are normally distributed and the standard for full credibility is based on a

90% probability that the observed loss cost is within 10% of the expected loss cost. The methodology is intended to limit the effect that random fluctuations in the data can have on the indicated loss cost.

Based on the limited fluctuation credibility model framework, the formula for the full credibility standard (N_C) is equal to:

$$N_C = (z / k)^2 = 271$$

where: N_C = # of claims required for full credibility (rounded to nearest integer)
   z = 1.645 (from the standard normal table corresponding to a 90% confidence interval)
   k = 10% (tolerance for error)

For each policy form, the number of claims, N_C, required for full credibility from the formula above was converted from a claims basis into an earned house years basis using a frequency and severity modification. This conversion was performed using the five-year historical frequency, average severity, and variance of the severity distribution for each policy form in the following formula:

$$N_E = (N_C / f) \times (1 + \sigma^2 / s^2) = 30,000$$

where: N_E = # of earned house years required for full credibility (rounded up to nearest 10,000)
   f = Five-Year Claim Frequency
   σ^2 = Variance of the Severity Distribution
   s = Average Claim Severity

Using N_E as the standard for full credibility, the credibility (Z) for each statewide policy form and each territory or territory group was calculated using the standard Square Root Rule or:

$$Z = (E / N_E)^{0.5}$$

where: Z = Credibility of Segment (limited to a maximum of 1.00)
   E = Five-Year Earned House Years

The table below displays the standard for full credibility for each policy form, the statewide total house years during the experience period, and the calculated credibility:

Policy Form	Standard (N_E)	Earned House Years (E)	Credibility (Z)
Owners	30,000	324,265	100.0%
Tenants	200,000	3,343	12.9%

The credibility-weighted loss cost from the NCRB's 2022 mobile homeowners MH(F) rate filing (trended to the proposed policy period) was used as the complement of credibility (CC) such that the credibility-weighted loss cost (LC_{CW}) is calculated as:

$$LC_{CW} = LC \times Z + CC \times (1.0 - Z)$$

where: LC_{CW} = Credibility-Weighted Loss Cost
   LC = Indicated Base Class Loss Cost
   CC = Complement of Credibility

To calculate the credibility of the indicated loss trends, limited fluctuation credibility was also used. A claims standard of 1,082 was used, which represents the number of claims needed to be within 5% of the expected trends with 90% probability. As the credibility was only used for informational purposes when making trend selections, no complement of credibility was used.

- **Modeled Hurricane Loss Costs** – Statewide average annual hurricane losses for each MH(F) policy form were provided by Aon evaluated as of December 31, 2022. The losses provided are based on an average of the AIR Touchstone v10 hurricane model and the RMS RiskLink v23 hurricane model. The losses were determined based on exposures that were trended to the proposed policy period and loaded for LAE using the selected 6.0% catastrophe LAE factor. On *Section C, Page 43*, the modeled hurricane losses are divided by the product of the 2022 earned house years, the 2022 average rating factor, and the 2022 premium trend factor to derive the modeled hurricane base class loss cost for each policy form.

- **Underwriting Expenses** – *Section C, Page 46* shows five years of aggregate premium and aggregate underwriting expenses for all companies writing MH(F) policies in North Carolina. The expense ratios shown for Commission & Brokerage and for Taxes, Licenses, & Fees use written premium as the denominator because these expenses are typically incurred when policies are written. The ratios for Other Acquisition and General Expenses use earned premium as the denominator because these expenses are typically incurred over the entire length of the policy. As noted above, one of the member companies transferred its mobile homeowners MH(F) policies to the MH(C) policy form during 2022. As a result, in order to determine expense provisions that accurately reflect the expected future distribution of companies, the historical expense data was restated to reflect the member companies currently writing MH(F) policies. The selected expense ratios reflect an average of the historical ratios over the last three years for each expense item. The sum of the expense ratios for Commission & Brokerage expenses and Taxes, Licenses, and Fees comprise the prospective policy's variable expense load whereas the sum of the expense ratios for Other Acquisition and General Expense comprise the fixed expense load.

- **Expense Trend** – Trend rates for fixed expenses, similar to loss trend rates, were selected separately for the experience period and the projection period. Indicated expense trend rates were derived from several different expense indices – the Consumer Price Index (including all items), the Consumer Price Index (all items excluding Energy), and the Compensation Cost Index. Additionally, a blended indication was derived by using a weighted average of the three indices with weights of 25%, 25%, and 50%, respectively.

  The selected expense trend rates are used to calculate expense trend factors by policy form, which are used in the calculation of the fixed expense per policy. *Section C, Page 44* shows the derivation of the expense trend factors, which are calculated in a manner similar to the loss trend factors. The experience trend period spans from the average date of incurred expense over the most recent three years, or July 1, 2021, to the end date of the experience period, or December 31, 2022. The projection trend period spans from the end date of the experience period, or December 31, 2022, to the average written date of the prospective policy period, or April 1, 2025.

- **Fixed Expense Per Policy** – To calculate the fixed expense per policy, trended fixed expense ratios were calculated by multiplying the selected fixed expense ratios from *Section C, Page 46* by the expense trend factor and dividing by the 2021 premium trend factor (since the average date of expenses underlying the fixed expense ratios is 7/1/2021). The fixed expense per policy was then calculated on *Section C, Page 45* by multiplying the trended fixed expense ratios by the average current base premiums.

- **Profit –** See the pre-filed testimony of G. Zanjani.

- **Contingencies –** See the pre-filed testimony of P. Anderson.

- **Policyholder Dividends –** *Section C, Page 48* contains support for the selected policyholder dividends, which was selected using five years of historical homeowners dividend and written premium data. See also the pre-filed testimony of P. Anderson.

- **Compensation for Assessment Risk –** The provisions for the compensation for assessment risk are calculated by policy form as (0.014 x Average Current Base Premium) / (1.0 – Commission & Brokerage – Taxes, Licenses, & Fees), as shown in *Section C, Page 49*. The 1.4% compensation for assessment risk provision was provided by Aon based on the methodology previously completed by Milliman. See also the pre-filed testimony of M. Mao.

- **Net Cost of Reinsurance –** The provisions for the net cost of reinsurance are based on an analysis performed by Aon. *Section C, Pages 50 and 51* show the average net cost of reinsurance by territory group as well as the statewide total as determined based on 2022 earned house years. The base class net cost of reinsurance is then determined by adjusting the average net cost of reinsurance by the 2022 average rating factor, 2022 premium trend factor, and variable expenses at both the statewide and territory group level.

- **Net Deviations –** *Section C, Page 52* compares actual written premium (including net deviations) to manual written premium (excluding net deviations) by calendar year to calculate the average net deviation from manual premiums. A provision of 5.0% was selected for net deviations. See also the pre-filed testimony of P. Anderson.

Indicated Rate Changes by Territory Group

In addition to the statewide rate indications, rate changes by territory group were also calculated for each policy form. The methodology for calculating the indicated rate changes at the territory group level is generally the same as the methodology used to produce the statewide indications. To calculate the indications by territory group, indicated base class loss costs (*Section C, Pages 6-16 and 17-27*), trended fixed expenses, the compensation for assessment risk, and the net cost of reinsurance (*Section C, Pages 45 and 49-51*) are calculated for each territory group and each policy form. The statewide excess wind and excess flood losses by policy form were allocated to each territory group using the distribution of wind and flood losses by accident year (see *Section C, Pages 15, 16, 26, and 27*). The indicated base rate excluding deviations was then calculated for each territory group for each policy form. The deviation per exposure was then added to the indicated base rates by territory group to derive the indicated required base class rate by territory group. Indicated rate changes were subsequently calculated by comparing the indicated required base class rate to the current base rate. See *Section C, Pages 6 and 17* for more details.

North Carolina Mobile Homeowners
MH(F) Program

Section A

Summary of Overall Rate Change

North Carolina
Mobile Homeowners
MH(F)

Summary of Indicated and Proposed Rate Changes

Policy Form	2022 Earned Premium at Current Manual Level [1]	2022 Earned House Years	Indicated Rate Change	Proposed Rate Changes [2]		
				Year 1	Year 2	Year 3
Owners	$56,651,185	57,587	83.0%	24.9%	21.2%	21.0%
Tenants	130,709	716	61.5%	24.8%	13.9%	13.6%
Total: All Policy Forms	**$56,781,894**	**58,303**	**82.9%**	**24.9%**	**21.2%**	**20.9%**

[1] Premium shown is based on only those policies that contained all the risk characteristics required to calculate a mobile homeowners premium. For more details on data excluded from parts of the rate review analysis, please see Section E, Page 5

[2] The proposed rate changes by policy form were selected by the North Carolina Rate Bureau and reflect the implementation of the proposed rates over a three-year period in order to reduce the impact of the rate increases on policyholders, with proposed effective dates of October 1, 2024 for Year 1, October 1, 2025 for Year 2, and October 1, 2026 for Year 3.

North Carolina
Mobile Homeowners
MH(F)

Summary of Indicated and Proposed Rate Changes by Territory Group

Territory Group	2022 Earned Premium at Current Manual Level			2022 Earned House Years		
	Owners	Tenants	Total	Owners	Tenants	Total
1	$6,246,669	$2,488	$6,249,157	3,306	13	3,319
2	2,344,183	2,520	2,346,703	1,902	13	1,915
3	14,388,809	21,337	14,410,146	12,149	99	12,248
4	7,077,179	22,745	7,099,924	6,267	112	6,378
5	6,746,357	13,854	6,760,211	6,975	76	7,051
6	19,847,988	67,765	19,915,753	26,988	404	27,393
Statewide	$56,651,185	$130,709	$56,781,894	57,587	716	58,303

Territory Group	Indicated Rate Change			Proposed Rate Change - Year 1		
	Owners	Tenants	Total	Owners	Tenants	Total
1	200.9%	211.3%	200.9%	49.0%	49.0%	49.0%
2	139.7%	129.9%	139.6%	49.0%	49.0%	49.0%
3	110.1%	82.9%	110.1%	35.0%	35.3%	35.0%
4	79.6%	58.7%	79.6%	25.0%	26.0%	25.0%
5	67.5%	60.1%	67.4%	19.0%	26.5%	19.0%
6	26.0%	47.9%	26.1%	9.0%	19.0%	9.0%
Statewide	83.0%	61.5%	82.9%	24.9%	24.8%	24.9%

Territory Group	2022 Earned Premium at Proposed Year 1 Rate Level			Proposed Rate Change - Year 2		
	Owners	Tenants	Total	Owners	Tenants	Total
1	$9,307,537	$3,707	$9,311,244	42.1%	44.6%	42.1%
2	3,492,833	3,755	3,496,587	26.8%	24.2%	26.8%
3	19,424,892	28,869	19,453,761	25.0%	16.3%	25.0%
4	8,846,474	28,659	8,875,132	23.0%	12.2%	23.0%
5	8,028,165	17,525	8,045,690	18.6%	12.5%	18.6%
6	21,634,307	80,640	21,714,947	8.0%	12.0%	8.0%
Statewide	$70,734,207	$163,155	$70,897,362	21.2%	13.9%	21.2%

Territory Group	2022 Earned Premium at Proposed Year 2 Rate Level			Proposed Rate Change - Year 3		
	Owners	Tenants	Total	Owners	Tenants	Total
1	$13,226,941	$5,359	$13,232,299	42.1%	44.6%	42.1%
2	4,429,610	4,664	4,434,274	26.8%	24.2%	26.8%
3	24,281,115	33,569	24,314,684	24.5%	16.3%	24.5%
4	10,881,163	32,167	10,913,329	16.8%	12.2%	16.8%
5	9,523,812	19,718	9,543,530	18.6%	12.5%	18.6%
6	23,365,051	90,317	23,455,369	7.0%	10.9%	7.0%
Statewide	$85,707,692	$185,793	$85,893,485	21.0%	13.6%	20.9%

Notes:

Premium shown is based on only those policies that contained all the risk characteristics required to calculate a mobile homeowners premium. For more details on data excluded from parts of the rate review analysis, please see Section E, Page 5.

The proposed rate changes by territory group were selected by the North Carolina Rate Bureau and reflect the implementation of the proposed rates over a three-year period in order to reduce the impact of the rate increases on policyholders.

North Carolina
Mobile Homeowners
MH(F)
Current Territory Definitions and Territory Groups
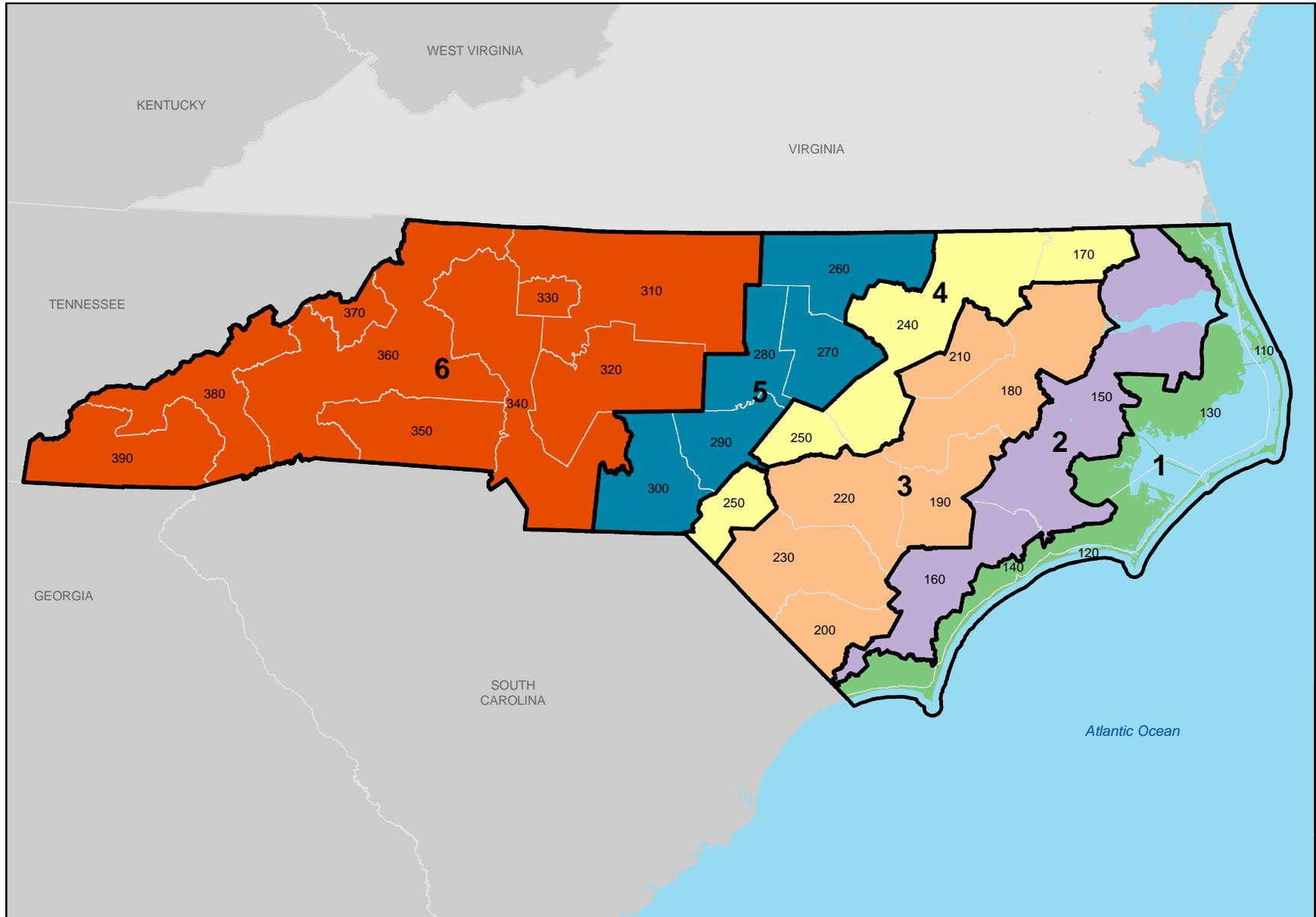
North Carolina Mobile Homeowners
MH(F) Program

Section B

Changes to Base Rates and Rating Plan Relativities

North Carolina Mobile Homeowners
MH(F) Program

Changes to Base Rates and Rating Plan Relativities

Table of Contents

North Carolina
Mobile Homeowners
MH(F)

Derivation of Proposed Year 1 Territory Relativities

Owners

Territory Group	(1) 2022 Earned Premium at Current Rate Level	(2) Proposed Year 1 Rate Change	(3) 2022 Earned Premium at Proposed Yr 1 Rate Level	(4) = (3) / (1) Measured Impact (% Change)	(5) Current Territory Relativity	(6) Proposed Yr 1 Territory Relativity	(7) = (6) / (5) % Change
1	$6,246,669	49.0%	$9,310,024	49.0%	1.481	1.616	9.1%
2	2,344,183	49.0%	3,491,489	48.9%	1.215	1.288	6.0%
3	14,388,809	35.0%	19,429,562	35.0%	1.000	1.000	0.0%
4	7,077,179	25.0%	8,840,282	24.9%	0.871	0.811	-6.9%
5	6,746,357	19.0%	8,027,068	19.0%	0.777	0.692	-10.9%
6	19,847,988	9.0%	21,617,210	8.9%	0.584	0.482	-17.5%
Statewide	$56,651,185	24.9%	$70,715,637	24.8%			

Tenants

Territory Group	(8) 2022 Earned Premium at Current Rate Level	(9) Proposed Year 1 Rate Change	(10) 2022 Earned Premium at Proposed Yr 1 Rate Level	(11) = (10) / (8) Measured Impact (% Change)	(12) Current Territory Relativity	(13) Proposed Yr 1 Territory Relativity	(14) = (13) / (12) % Change
1	$2,488	49.0%	$3,711	49.2%	1.294	1.464	13.1%
2	2,520	49.0%	3,755	49.0%	1.235	1.386	12.2%
3	21,337	35.3%	28,870	35.3%	1.000	1.000	0.0%
4	22,745	26.0%	28,646	25.9%	0.878	0.821	-6.5%
5	13,854	26.5%	17,521	26.5%	0.778	0.733	-5.8%
6	67,765	19.0%	80,648	19.0%	0.748	0.665	-11.1%
Statewide	$130,709	24.8%	$163,150	24.8%			

(1), (2), (8), (9) From Section A, Page 2
(3), (10) Based on extension of exposures method and proposed balanced rates from Section B, Page 2
(4), (11) Measured impact differs from (2) due to rounding the proposed rates to the nearest dollar
(5), (12) From current MH(F) rate manual
(6), (13) Determined via extension of exposures method such that (3) and (10) achieve the proposed rate changes in (2) and (9), respectively, as close as possible

North Carolina
Mobile Homeowners
MH(F) - Owners

Derivation of Proposed Year 1 Base Rates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(13)	(14)	(15)	(16)
							= (3) x [1 + (6)]	= (4) x [1 + (6)]	= (7) x (12)	= (8) x (12)		= (15) / (5)
Amount of Insurance	Territory Group 3 Earned House Years		Current Rate		2022 Terr Grp 3 Earned Premium at Current Rate Level	Proposed Year 1 Rate Change	Unbalanced Proposed Year 1 Rate		Balanced Proposed Year 1 Rate		2022 Terr Grp 3 Earned Premium at Proposed Yr 1 Rate Level	Measured Impact (% Change)
	MH(F)-2	MH(F)-3	MH(F)-2	MH(F)-3			MH(F)-2	MH(F)-3	MH(F)-2	MH(F)-3		
Missing	485	38	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	0	N/A
$2,000	1	0	$414.00	$472.00	$447	35.0%	$559.00	$637.00	$532.00	$606.00	595	33.2%
3,000	0	0	428.00	489.00	0	35.0%	578.00	660.00	550.00	628.00	0	N/A
4,000	3	0	444.00	509.00	1,170	35.0%	599.00	687.00	570.00	653.00	1,532	30.9%
5,000	2	1	462.00	527.00	857	35.0%	624.00	711.00	593.00	676.00	1,100	28.3%
6,000	2	3	476.00	545.00	1,529	35.0%	643.00	736.00	611.00	700.00	1,964	28.4%
7,000	11	1	495.00	563.00	4,128	35.0%	668.00	760.00	635.00	723.00	5,399	30.8%
8,000	4	11	510.00	583.00	5,058	35.0%	689.00	787.00	655.00	748.00	6,513	28.8%
9,000	11	1	527.00	603.00	4,805	35.0%	711.00	814.00	676.00	774.00	6,368	32.5%
10,000	44	34	544.00	619.00	28,741	35.0%	734.00	836.00	698.00	795.00	37,569	30.7%
11,000	31	4	559.00	638.00	13,989	35.0%	755.00	861.00	718.00	819.00	18,527	32.4%
12,000	58	21	577.00	658.00	32,519	35.0%	779.00	888.00	741.00	844.00	43,377	33.4%
13,000	38	14	591.00	677.00	21,439	35.0%	798.00	914.00	759.00	869.00	28,534	33.1%
14,000	74	17	608.00	694.00	39,968	35.0%	821.00	937.00	781.00	891.00	54,386	36.1%
15,000	102	53	618.00	708.00	66,392	35.0%	834.00	956.00	793.00	909.00	88,871	33.9%
20,000	303	129	696.00	801.00	206,431	35.0%	940.00	1,081.00	894.00	1,028.00	277,861	34.6%
25,000	339	114	776.00	897.00	247,474	35.0%	1,048.00	1,211.00	996.00	1,151.00	330,684	33.6%
30,000	368	145	853.00	990.00	316,111	35.0%	1,152.00	1,337.00	1,095.00	1,271.00	420,684	33.1%
35,000	452	134	932.00	1,085.00	413,686	35.0%	1,258.00	1,465.00	1,196.00	1,393.00	548,910	32.7%
40,000	523	169	1,011.00	1,177.00	538,000	35.0%	1,365.00	1,589.00	1,298.00	1,511.00	714,583	32.8%
45,000	588	114	1,088.00	1,274.00	608,857	35.0%	1,469.00	1,720.00	1,397.00	1,635.00	812,068	33.4%
50,000	787	163	1,168.00	1,368.00	885,739	35.0%	1,577.00	1,847.00	1,499.00	1,756.00	1,193,163	34.7%
55,000	663	88	1,246.00	1,463.00	772,095	35.0%	1,682.00	1,975.00	1,599.00	1,878.00	1,042,045	35.0%
60,000	689	150	1,325.00	1,556.00	902,780	35.0%	1,789.00	2,101.00	1,701.00	1,998.00	1,226,272	35.8%
65,000	649	104	1,403.00	1,649.00	885,973	35.0%	1,894.00	2,226.00	1,801.00	2,117.00	1,195,931	35.0%
70,000	640	84	1,480.00	1,744.00	912,783	35.0%	1,998.00	2,354.00	1,900.00	2,238.00	1,233,786	35.2%
75,000	584	89	1,560.00	1,838.00	910,166	35.0%	2,106.00	2,481.00	2,002.00	2,359.00	1,224,313	34.5%
80,000	475	67	1,638.00	1,933.00	770,041	35.0%	2,211.00	2,610.00	2,102.00	2,482.00	1,038,272	34.8%
85,000	484	36	1,718.00	2,027.00	801,082	35.0%	2,319.00	2,736.00	2,205.00	2,601.00	1,070,068	33.6%
90,000	441	25	1,795.00	2,122.00	762,335	35.0%	2,423.00	2,865.00	2,304.00	2,724.00	1,014,120	33.0%
95,000	333	12	1,874.00	2,214.00	589,829	35.0%	2,530.00	2,989.00	2,406.00	2,842.00	786,218	33.3%
100,000	1,576	89	1,953.00	2,311.00	3,644,385	35.0%	2,637.00	3,120.00	2,507.00	2,967.00	5,005,852	37.4%
Total / Average	10,763	1,908			$14,388,809	35.0%					$19,429,562	35.0%
Each Addl $1,000			15.00	19.00			20.00	26.00	19.00	25.00		

(9) Total Unbalanced Proposed Year 1 Premium:	$20,434,496	
(10) % Change:	42.0%	
(11) Indicated Base Rate Offset:	0.951	
(12) Selected Base Rate Offset:	0.951	

(1), (2) Based on data provided by member companies
(3), (4) Based on current MH(F) rate manual
(5) Based on data provided by member companies and the extension of exposures method
(6) From Section A, Page 2
(7), (8) Rounded to the nearest dollar
(9) Based on (7), (8), and the extension of exposures method
(10) = (9) / (5), Total - 1
(11) = [1 + (6), Total] / [1 + (10)]
(12) Based on (11) and the extension of exposures method. Selected so that (16), Total is as close as possible to (6), Total
(13), (14) Rounded to the nearest dollar
(15) Based on (13), (14), and the extension of exposures method

North Carolina
Mobile Homeowners
MH(F) - Tenants

Derivation of Proposed Year 1 Base Rates

	(1)	(2)	(3)	(4)	(5) = (2) x [1 + (4)]	(10) = (5) x (9)	(11)	(12) = (11) / (3)
Amount of Insurance	Terr Grp 3 Earned House Years	Current Rate	2022 Terr Grp 3 Earned Premium at Current Manual Level	Proposed Year 1 Rate Change	Unbalanced Proposed Yr 1 Rate	Balanced Proposed Yr 1 Rate	2022 Terr Grp 3 Earned Premium at Proposed Yr 1 Rate Level	Measured Impact (% Change)
Missing	0	N/A	$0	N/A	N/A	N/A	$0	N/A
$2,000	0	$60.00	0	35.3%	$81.00	$79.00	0	N/A
3,000	2	74.00	92	35.3%	100.00	98.00	121	31.5%
4,000	0	88.00	0	35.3%	119.00	116.00	0	N/A
5,000	3	101.00	231	35.3%	137.00	134.00	307	33.1%
6,000	1	115.00	77	35.3%	156.00	152.00	101	31.3%
7,000	0	130.00	9	35.3%	176.00	172.00	12	36.9%
8,000	0	142.00	18	35.3%	192.00	187.00	24	31.4%
9,000	0	157.00	0	35.3%	212.00	207.00	0	N/A
10,000	14	170.00	1,570	35.3%	230.00	224.00	2,065	31.5%
11,000	1	184.00	129	35.3%	249.00	243.00	171	32.5%
12,000	8	197.00	1,078	35.3%	266.00	260.00	1,426	32.3%
13,000	2	210.00	336	35.3%	284.00	277.00	445	32.5%
14,000	0	223.00	46	35.3%	302.00	295.00	61	31.8%
15,000	10	236.00	1,516	35.3%	319.00	311.00	1,998	31.8%
20,000	13	302.00	2,544	35.3%	408.00	398.00	3,358	32.0%
25,000	24	368.00	5,595	35.3%	498.00	486.00	7,410	32.4%
30,000	7	434.00	2,140	35.3%	587.00	573.00	2,947	37.7%
35,000	2	500.00	562	35.3%	676.00	660.00	750	33.4%
40,000	5	565.00	1,717	35.3%	764.00	745.00	2,420	40.9%
45,000	0	631.00	0	35.3%	853.00	832.00	0	N/A
50,000	6	697.00	3,677	35.3%	943.00	920.00	5,253	42.9%
Total / Average	99		$21,337	35.3%			$28,870	35.3%
Each Addl $1,000		13.00			18.00	18.00		

(6) Total Unbalanced Proposed Year 1 Premium: $29,588
(7) % Change: 38.7%
(8) Indicated Base Rate Offset: 0.975
(9) Selected Base Rate Offset: 0.976

(1) Based on data provided by member companies
(2) Based on current MH(F) rate manual
(3) Based on data provided by member companies and the extension of exposures method
(4) From Section A, Page 2
(5) Rounded to the nearest dollar
(6) Based on (5) and the extension of exposures method
(7) = (6) / (3), Total - 1
(8) = [1 + (4), Total] / [1 + (7)]
(9) Based on (8) and the extension of exposures method. Selected so that (12), Total is as close as possible to (4), Total
(10) Rounded to the nearest dollar
(11) Based on (10) and the extension of exposures method

North Carolina
Mobile Homeowners
MH(F)

Wind Exclusion Credits
Territory Groups 1 and 2 (Territories 110-160)

	Owners		
Territory Group	Current Credit	Measured Impact (% Change)	Proposed Credit
1	74.1%	-8.1%	76.2%
2	70.4%	-3.0%	71.3%

	Tenants		
Territory Group	Current Credit	Measured Impact (% Change)	Proposed Credit
1	68.7%	44.1%	54.9%
2	49.2%	12.8%	42.7%

Note:
Measured Impact = (1 - Proposed Credit) / (1 - Current Credit) - 1

North Carolina
Mobile Homeowners
MH(F)

Derivation of Proposed Year 2 Territory Relativities

Owners

	(1)	(2)	(3)	(4) = (3) / (1)	(5)	(6)	(7) = (6) / (5)
Territory Group	2022 Earned Premium at Proposed Yr 1 Rate Level	Proposed Year 2 Rate Change	2022 Earned Premium at Proposed Yr 2 Rate Level	Measured Impact (% Change)	Proposed Yr 1 Territory Relativity	Proposed Yr 2 Territory Relativity	% Change
1	$9,310,024	42.1%	$13,233,216	42.1%	1.616	1.823	12.8%
2	3,491,489	26.8%	4,429,385	26.9%	1.288	1.286	-0.2%
3	19,429,562	25.0%	24,318,583	25.2%	1.000	1.000	0.0%
4	8,840,282	23.0%	10,867,619	22.9%	0.811	0.798	-1.6%
5	8,027,068	18.6%	9,517,360	18.6%	0.692	0.658	-4.9%
6	21,617,210	8.0%	23,341,869	8.0%	0.482	0.423	-12.2%
Statewide	$70,715,637	21.2%	$85,708,032	21.2%			

Tenants

	(8)	(9)	(10)	(11) = (10) / (8)	(12)	(13)	(14) = (13) / (12)
Territory Group	2022 Earned Premium at Proposed Yr 1 Rate Level	Proposed Year 2 Rate Change	2022 Earned Premium at Proposed Yr 2 Rate Level	Measured Impact (% Change)	Proposed Yr 1 Territory Relativity	Proposed Yr 2 Territory Relativity	% Change
1	$3,711	44.6%	$5,360	44.4%	1.464	1.807	23.4%
2	3,755	24.2%	4,663	24.2%	1.386	1.482	6.9%
3	28,870	16.3%	33,600	16.4%	1.000	1.000	0.0%
4	28,646	12.2%	32,141	12.2%	0.821	0.797	-2.9%
5	17,521	12.5%	19,702	12.4%	0.733	0.713	-2.7%
6	80,648	12.0%	90,275	11.9%	0.665	0.644	-3.2%
Statewide	$163,150	13.9%	$185,741	13.8%			

(1), (8) From Section B, Page 1
(2), (9) From Section A, Page 2
(3), (10) Based on extension of exposures method and proposed balanced rates from Section B, Page 6
(4), (11) Measured impact differs from (2) due to rounding the proposed rates to the nearest dollar
(5), (12) From proposed year 1 MH(F) rate manual
(6), (13) Determined via extension of exposures method such that (3) and (10) achieve the proposed rate changes in (2) and (9), respectively, as close as possible

North Carolina
Mobile Homeowners
MH(F) - Owners

Derivation of Proposed Year 2 Base Rates

	(1)	(2)	(3)	(4)	(5)	(6)	(7) = (3) x [1 + (6)]	(8) = (4) x [1 + (6)]	(13) = (7) x (12)	(14) = (8) x (12)	(15)	(16) = (15) / (5)
					2022 Terr Grp 3 Earned Premium at Proposed	Proposed Year 2	Unbalanced Proposed Year 2 Rate		Balanced Proposed Year 2 Rate		2022 Terr Grp 3 Earned Premium at Proposed	Measured Impact
Amount of Insurance	Territory Group 3 Earned House Years		Proposed Year 1 Rate		Yr 1 Rate Level	Rate Change					Yr 2 Rate Level	(% Change)
	MH(F)-2	MH(F)-3	MH(F)-2	MH(F)-3			MH(F)-2	MH(F)-3	MH(F)-2	MH(F)-3		
Missing	485	38	N/A	N/A	$0	N/A	N/A	N/A	N/A	N/A	$0	N/A
$2,000	1	0	$532.00	$606.00	595	25.0%	$665.00	$758.00	$654.00	$745.00	752	26.3%
3,000	0	0	550.00	628.00	0	25.0%	688.00	785.00	676.00	772.00	0	N/A
4,000	3	0	570.00	653.00	1,532	25.0%	713.00	816.00	701.00	802.00	1,948	27.2%
5,000	2	1	593.00	676.00	1,100	25.0%	741.00	845.00	729.00	831.00	1,400	27.3%
6,000	2	3	611.00	700.00	1,964	25.0%	764.00	875.00	751.00	860.00	2,445	24.5%
7,000	11	1	635.00	723.00	5,399	25.0%	794.00	904.00	781.00	889.00	6,795	25.9%
8,000	4	11	655.00	748.00	6,513	25.0%	819.00	935.00	805.00	919.00	8,142	25.0%
9,000	11	1	676.00	774.00	6,368	25.0%	845.00	968.00	831.00	952.00	8,207	28.9%
10,000	44	34	698.00	795.00	37,569	25.0%	873.00	994.00	858.00	977.00	47,575	26.6%
11,000	31	4	718.00	819.00	18,527	25.0%	898.00	1,024.00	883.00	1,007.00	23,532	27.0%
12,000	58	21	741.00	844.00	43,377	25.0%	926.00	1,055.00	910.00	1,037.00	55,468	27.9%
13,000	38	14	759.00	869.00	28,534	25.0%	949.00	1,086.00	933.00	1,068.00	36,068	26.4%
14,000	74	17	781.00	891.00	54,386	25.0%	976.00	1,114.00	960.00	1,095.00	69,639	28.0%
15,000	102	53	793.00	909.00	88,871	25.0%	991.00	1,136.00	974.00	1,117.00	112,382	26.5%
20,000	303	129	894.00	1,028.00	277,861	25.0%	1,118.00	1,285.00	1,099.00	1,263.00	350,069	26.0%
25,000	339	114	996.00	1,151.00	330,684	25.0%	1,245.00	1,439.00	1,224.00	1,415.00	414,956	25.5%
30,000	368	145	1,095.00	1,271.00	420,684	25.0%	1,369.00	1,589.00	1,346.00	1,562.00	531,441	26.3%
35,000	452	134	1,196.00	1,393.00	548,910	25.0%	1,495.00	1,741.00	1,470.00	1,712.00	698,148	27.2%
40,000	523	169	1,298.00	1,511.00	714,583	25.0%	1,623.00	1,889.00	1,596.00	1,857.00	913,913	27.9%
45,000	588	114	1,397.00	1,635.00	812,068	25.0%	1,746.00	2,044.00	1,717.00	2,010.00	1,036,869	27.7%
50,000	787	163	1,499.00	1,756.00	1,193,163	25.0%	1,874.00	2,195.00	1,843.00	2,158.00	1,522,680	27.6%
55,000	663	88	1,599.00	1,878.00	1,042,045	25.0%	1,999.00	2,348.00	1,965.00	2,309.00	1,322,602	26.9%
60,000	689	150	1,701.00	1,998.00	1,226,272	25.0%	2,126.00	2,498.00	2,090.00	2,456.00	1,557,615	27.0%
65,000	649	104	1,801.00	2,117.00	1,195,931	25.0%	2,251.00	2,646.00	2,213.00	2,602.00	1,512,571	26.5%
70,000	640	84	1,900.00	2,238.00	1,233,786	25.0%	2,375.00	2,798.00	2,335.00	2,751.00	1,556,919	26.2%
75,000	584	89	2,002.00	2,359.00	1,224,313	25.0%	2,503.00	2,949.00	2,461.00	2,900.00	1,541,104	25.9%
80,000	475	67	2,102.00	2,482.00	1,038,272	25.0%	2,628.00	3,103.00	2,584.00	3,051.00	1,306,846	25.9%
85,000	484	36	2,205.00	2,601.00	1,070,068	25.0%	2,756.00	3,251.00	2,710.00	3,196.00	1,341,975	25.4%
90,000	441	25	2,304.00	2,724.00	1,014,120	25.0%	2,880.00	3,405.00	2,832.00	3,348.00	1,269,657	25.2%
95,000	333	12	2,406.00	2,842.00	786,218	25.0%	3,008.00	3,553.00	2,958.00	3,493.00	984,303	25.2%
100,000	1,576	89	2,507.00	2,967.00	5,005,852	25.0%	3,134.00	3,709.00	3,081.00	3,647.00	6,082,562	21.5%
Total / Average	10,763	1,908			$19,429,562	25.0%					$24,318,583	25.2%
Each Addl $1,000			19.00	25.00			24.00	31.00	24.00	30.00		

(9) Total Unbalanced Proposed Year 2 Premium:	$24,733,364
(10) % Change:	27.3%
(11) Indicated Base Rate Offset:	0.982
(12) Selected Base Rate Offset:	0.983

(1), (2) Based on data provided by member companies
(3), (4) Based on proposed year 1 MH(F) rate manual
(5) Based on data provided by member companies and the extension of exposures method
(6) From Section A, Page 2
(7), (8) Rounded to the nearest dollar
(9) Based on (7), (8), and the extension of exposures method
(10) = (9) / (5), Total - 1
(11) = [1 + (6), Total] / [1 + (10)]
(12) Based on (11) and the extension of exposures method. Selected so that (16), Total is as close as possible to (6), Total
(13), (14) Rounded to the nearest dollar
(15) Based on (13), (14), and the extension of exposures method

North Carolina
Mobile Homeowners
MH(F) - Tenants

Derivation of Proposed Year 2 Base Rates

	(1)	(2)	(3)	(4)	(5) = (2) x [1 + (4)]	(10) = (5) x (9)	(11)	(12) = (11) / (3)
Amount of Insurance	Terr Grp 3 Earned House Years	Proposed Year 1 Rate	2022 Terr Grp 3 Earned Premium at Proposed Yr 1 Rate Level	Proposed Year 2 Rate Change	Unbalanced Proposed Yr 2 Rate	Balanced Proposed Yr 2 Rate	2022 Terr Grp 3 Earned Premium at Proposed Yr 2 Rate Level	Measured Impact (% Change)
Missing	0	N/A	$0	N/A	N/A	N/A	$0	N/A
$2,000	0	$79.00	0	16.3%	$92.00	$91.00	0	N/A
3,000	2	98.00	121	16.3%	114.00	112.00	141	16.5%
4,000	0	116.00	0	16.3%	135.00	133.00	0	N/A
5,000	3	134.00	307	16.3%	156.00	154.00	352	14.5%
6,000	1	152.00	101	16.3%	177.00	174.00	116	14.8%
7,000	0	172.00	12	16.3%	200.00	197.00	14	13.6%
8,000	0	187.00	24	16.3%	217.00	214.00	26	9.9%
9,000	0	207.00	0	16.3%	241.00	237.00	0	N/A
10,000	14	224.00	2,065	16.3%	261.00	257.00	2,373	14.9%
11,000	1	243.00	171	16.3%	283.00	279.00	195	14.1%
12,000	8	260.00	1,426	16.3%	302.00	297.00	1,629	14.2%
13,000	2	277.00	445	16.3%	322.00	317.00	509	14.3%
14,000	0	295.00	61	16.3%	343.00	338.00	69	13.8%
15,000	10	311.00	1,998	16.3%	362.00	357.00	2,303	15.2%
20,000	13	398.00	3,358	16.3%	463.00	456.00	3,868	15.2%
25,000	24	486.00	7,410	16.3%	565.00	557.00	8,676	17.1%
30,000	7	573.00	2,947	16.3%	666.00	656.00	3,476	17.9%
35,000	2	660.00	750	16.3%	768.00	757.00	863	15.1%
40,000	5	745.00	2,420	16.3%	866.00	853.00	2,845	17.6%
45,000	0	832.00	0	16.3%	968.00	954.00	0	N/A
50,000	6	920.00	5,253	16.3%	1,070.00	1,054.00	6,145	17.0%
Total / Average	99		$28,870	16.3%			$33,600	16.4%
Each Addl $1,000		18.00			21.00	21.00		

(6) Total Unbalanced Proposed Year 2 Premium:	$34,109
(7) % Change:	18.1%
(8) Indicated Base Rate Offset:	0.984
(9) Selected Base Rate Offset:	0.985

(1) Based on data provided by member companies
(2) Based on proposed year 1 MH(F) rate manual
(3) Based on data provided by member companies and the extension of exposures method
(4) From Section A, Page 2
(5) Rounded to the nearest dollar
(6) Based on (5) and the extension of exposures method
(7) = (6) / (3), Total - 1
(8) = [1 + (4), Total] / [1 + (7)]
(9) Based on (8) and the extension of exposures method. Selected so that (12), Total is as close as possible to (4), Total
(10) Rounded to the nearest dollar
(11) Based on (10) and the extension of exposures method

North Carolina
Mobile Homeowners
MH(F)

Derivation of Proposed Year 3 Territory Relativities

Owners

	(1)	(2)	(3)	(4) = (3) / (1)	(5)	(6)	(7) = (6) / (5)
Territory Group	2022 Earned Premium at Proposed Yr 2 Rate Level	Proposed Year 3 Rate Change	2022 Earned Premium at Proposed Yr 3 Rate Level	Measured Impact (% Change)	Proposed Yr 2 Territory Relativity	Proposed Yr 3 Territory Relativity	% Change
1	$13,233,216	42.1%	$18,804,002	42.1%	1.823	2.072	13.7%
2	4,429,385	26.8%	5,616,062	26.8%	1.286	1.291	0.4%
3	24,318,583	24.5%	30,285,843	24.5%	1.000	1.000	0.0%
4	10,867,619	16.8%	12,697,927	16.8%	0.798	0.752	-5.8%
5	9,517,360	18.6%	11,296,842	18.7%	0.658	0.627	-4.7%
6	23,341,869	7.0%	24,974,889	7.0%	0.423	0.368	-13.0%
Statewide	$85,708,032	21.0%	$103,675,565	21.0%			

Tenants

	(8)	(9)	(10)	(11) = (10) / (8)	(12)	(13)	(14) = (13) / (12)
Territory Group	2022 Earned Premium at Proposed Yr 2 Rate Level	Proposed Year 3 Rate Change	2022 Earned Premium at Proposed Yr 3 Rate Level	Measured Impact (% Change)	Proposed Yr 2 Territory Relativity	Proposed Yr 3 Territory Relativity	% Change
1	$5,360	44.6%	$7,743	44.5%	1.807	2.176	20.4%
2	4,663	24.2%	5,792	24.2%	1.482	1.568	5.8%
3	33,600	16.3%	39,039	16.2%	1.000	1.000	0.0%
4	32,141	12.2%	36,060	12.2%	0.797	0.774	-2.9%
5	19,702	12.5%	22,156	12.5%	0.713	0.693	-2.8%
6	90,275	10.9%	100,137	10.9%	0.644	0.619	-3.9%
Statewide	$185,741	13.6%	$210,927	13.6%			

(1), (8) From Section B, Page 5
(2), (9) From Section A, Page 2
(3), (10) Based on extension of exposures method and proposed balanced rates from Section B, Page 9
(4), (11) Measured impact differs from (2) due to rounding the proposed rates to the nearest dollar
(5), (12) From proposed year 2 MH(F) rate manual
(6), (13) Determined via extension of exposures method such that (3) and (10) achieve the proposed rate changes in (2) and (9), respectively, as close as possible

North Carolina
Mobile Homeowners
MH(F) - Owners

Derivation of Proposed Year 3 Base Rates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(13)	(14)	(15)	(16)
							= (3) x [1 + (6)]	= (4) x [1 + (6)]	= (7) x (12)	= (8) x (12)		= (15) / (5)
					2022 Terr Grp 3						2022 Terr Grp 3	
	Territory Group 3 Earned House Years		Proposed Year 2 Rate		Earned Premium at Proposed	Proposed Year 3	Unbalanced Proposed Year 3 Rate		Balanced Proposed Year 3 Rate		Earned Premium at Proposed	Measured Impact
Amount of Insurance	MH(F)-2	MH(F)-3	MH(F)-2	MH(F)-3	Yr 2 Rate Level	Rate Change	MH(F)-2	MH(F)-3	MH(F)-2	MH(F)-3	Yr 3 Rate Level	(% Change)
Missing	485	38	N/A	N/A	$0	N/A	N/A	N/A	N/A	N/A	$0	N/A
$2,000	1	0	$654.00	$745.00	752	24.5%	$814.00	$928.00	$798.00	$910.00	939	24.9%
3,000	0	0	676.00	772.00	0	24.5%	842.00	961.00	825.00	942.00	0	N/A
4,000	3	0	701.00	802.00	1,948	24.5%	873.00	999.00	856.00	979.00	2,441	25.3%
5,000	2	1	729.00	831.00	1,400	24.5%	908.00	1,035.00	890.00	1,014.00	1,775	26.8%
6,000	2	3	751.00	860.00	2,445	24.5%	935.00	1,071.00	916.00	1,050.00	3,024	23.7%
7,000	11	1	781.00	889.00	6,795	24.5%	972.00	1,107.00	953.00	1,085.00	8,439	24.2%
8,000	4	11	805.00	919.00	8,142	24.5%	1,002.00	1,144.00	982.00	1,121.00	10,108	24.1%
9,000	11	1	831.00	952.00	8,207	24.5%	1,035.00	1,185.00	1,014.00	1,161.00	10,379	26.5%
10,000	44	34	858.00	977.00	47,575	24.5%	1,068.00	1,217.00	1,047.00	1,193.00	59,471	25.0%
11,000	31	4	883.00	1,007.00	23,532	24.5%	1,099.00	1,254.00	1,077.00	1,229.00	29,446	25.1%
12,000	58	21	910.00	1,037.00	55,468	24.5%	1,133.00	1,291.00	1,110.00	1,265.00	69,738	25.7%
13,000	38	14	933.00	1,068.00	36,068	24.5%	1,162.00	1,330.00	1,139.00	1,304.00	45,002	24.8%
14,000	74	17	960.00	1,095.00	69,639	24.5%	1,195.00	1,363.00	1,171.00	1,336.00	87,646	25.9%
15,000	102	53	974.00	1,117.00	112,382	24.5%	1,213.00	1,391.00	1,189.00	1,363.00	140,209	24.8%
20,000	303	129	1,099.00	1,263.00	350,069	24.5%	1,368.00	1,573.00	1,341.00	1,542.00	438,438	25.2%
25,000	339	114	1,224.00	1,415.00	414,956	24.5%	1,524.00	1,762.00	1,494.00	1,727.00	526,986	27.0%
30,000	368	145	1,346.00	1,562.00	531,441	24.5%	1,676.00	1,945.00	1,643.00	1,906.00	677,598	27.5%
35,000	452	134	1,470.00	1,712.00	698,148	24.5%	1,830.00	2,132.00	1,794.00	2,090.00	886,049	26.9%
40,000	523	169	1,596.00	1,857.00	913,913	24.5%	1,987.00	2,312.00	1,948.00	2,266.00	1,155,715	26.5%
45,000	588	114	1,717.00	2,010.00	1,036,869	24.5%	2,138.00	2,503.00	2,096.00	2,453.00	1,304,109	25.8%
50,000	787	163	1,843.00	2,158.00	1,522,680	24.5%	2,295.00	2,687.00	2,249.00	2,634.00	1,912,617	25.6%
55,000	663	88	1,965.00	2,309.00	1,322,602	24.5%	2,447.00	2,875.00	2,398.00	2,818.00	1,654,239	25.1%
60,000	689	150	2,090.00	2,456.00	1,557,615	24.5%	2,602.00	3,058.00	2,550.00	2,997.00	1,949,109	25.1%
65,000	649	104	2,213.00	2,602.00	1,512,571	24.5%	2,756.00	3,240.00	2,701.00	3,176.00	1,887,144	24.8%
70,000	640	84	2,335.00	2,751.00	1,556,919	24.5%	2,907.00	3,425.00	2,849.00	3,357.00	1,938,870	24.5%
75,000	584	89	2,461.00	2,900.00	1,541,104	24.5%	3,064.00	3,611.00	3,003.00	3,539.00	1,915,332	24.3%
80,000	475	67	2,584.00	3,051.00	1,306,846	24.5%	3,217.00	3,799.00	3,153.00	3,724.00	1,624,242	24.3%
85,000	484	36	2,710.00	3,196.00	1,341,975	24.5%	3,374.00	3,980.00	3,307.00	3,901.00	1,663,866	24.0%
90,000	441	25	2,832.00	3,348.00	1,269,657	24.5%	3,526.00	4,169.00	3,456.00	4,086.00	1,572,000	23.8%
95,000	333	12	2,958.00	3,493.00	984,303	24.5%	3,683.00	4,349.00	3,610.00	4,263.00	1,218,604	23.8%
100,000	1,576	89	3,081.00	3,647.00	6,082,562	24.5%	3,836.00	4,541.00	3,760.00	4,451.00	7,492,308	23.2%
Total / Average	10,763	1,908			$24,318,583	24.5%					$30,285,843	24.5%
Each Addl $1,000			24.00	30.00			30.00	37.00	29.00	36.00		

(9) Total Unbalanced Proposed Year 3 Premium: $30,899,895
(10) % Change: 27.1%
(11) Indicated Base Rate Offset: 0.980
(12) Selected Base Rate Offset: 0.980

(1), (2) Based on data provided by member companies
(3), (4) Based on proposed Year 2 MH(F) rate manual
(5) Based on data provided by member companies and the extension of exposures method
(6) From Section A, Page 2
(7), (8) Rounded to the nearest dollar
(9) Based on (7), (8), and the extension of exposures method
(10) = (9) / (5), Total - 1
(11) = [1 + (6), Total] / [1 + (10)]
(12) Based on (11) and the extension of exposures method. Selected so that (16), Total is as close as possible to (6), Total
(13), (14) Rounded to the nearest dollar
(15) Based on (13), (14), and the extension of exposures method

North Carolina
Mobile Homeowners
MH(F) - Tenants

Derivation of Proposed Year 3 Base Rates

	(1)	(2)	(3)	(4)	(5) = (2) x [1 + (4)]	(10) = (5) x (9)	(11)	(12) = (11) / (3)
Amount of Insurance	Terr Grp 3 Earned House Years	Proposed Year 2 Rate	2022 Terr Grp 3 Earned Premium at Proposed Yr 2 Rate Level	Proposed Year 3 Rate Change	Unbalanced Proposed Yr 3 Rate	Balanced Proposed Yr 3 Rate	2022 Terr Grp 3 Earned Premium at Proposed Yr 3 Rate Level	Measured Impact (% Change)
Missing	0	N/A	$0	N/A	N/A	N/A	$0	N/A
$2,000	0	$91.00	0	16.3%	106.00	104.00	0	N/A
3,000	2	112.00	141	16.3%	130.00	128.00	160	13.5%
4,000	0	133.00	0	16.3%	155.00	152.00	0	N/A
5,000	3	154.00	352	16.3%	179.00	176.00	405	15.1%
6,000	1	174.00	116	16.3%	202.00	199.00	132	13.8%
7,000	0	197.00	14	16.3%	229.00	225.00	16	14.3%
8,000	0	214.00	26	16.3%	249.00	245.00	30	15.4%
9,000	0	237.00	0	16.3%	276.00	271.00	0	N/A
10,000	14	257.00	2,373	16.3%	299.00	294.00	2,712	14.3%
11,000	1	279.00	195	16.3%	324.00	319.00	223	14.4%
12,000	8	297.00	1,629	16.3%	345.00	339.00	1,862	14.3%
13,000	2	317.00	509	16.3%	369.00	363.00	581	14.1%
14,000	0	338.00	69	16.3%	393.00	386.00	79	14.5%
15,000	10	357.00	2,303	16.3%	415.00	408.00	2,630	14.2%
20,000	13	456.00	3,868	16.3%	530.00	521.00	4,459	15.3%
25,000	24	557.00	8,676	16.3%	648.00	637.00	10,205	17.6%
30,000	7	656.00	3,476	16.3%	763.00	750.00	4,077	17.3%
35,000	2	757.00	863	16.3%	880.00	865.00	989	14.6%
40,000	5	853.00	2,845	16.3%	992.00	975.00	3,317	16.6%
45,000	0	954.00	0	16.3%	1,110.00	1,091.00	0	N/A
50,000	6	1,054.00	6,145	16.3%	1,226.00	1,205.00	7,162	16.6%
Total / Average	99		$33,600	16.3%			$39,039	16.2%
Each Addl $1,000		21.00			24.00	24.00		

(6) Total Unbalanced Proposed Year 3 Premium:	$39,705
(7) % Change:	18.2%
(8) Indicated Base Rate Offset:	0.984
(9) Selected Base Rate Offset:	0.983

(1) Based on data provided by member companies
(2) Based on proposed Year 2 MH(F) rate manual
(3) Based on data provided by member companies and the extension of exposures method
(4) From Section A, Page 2
(5) Rounded to the nearest dollar
(6) Based on (5) and the extension of exposures method
(7) = (6) / (3), Total - 1
(8) = [1 + (4), Total] / [1 + (7)]
(9) Based on (8) and the extension of exposures method. Selected so that (12), Total is as close as possible to (4), Total
(10) Rounded to the nearest dollar
(11) Based on (10) and the extension of exposures method

North Carolina Mobile Homeowners
MH(F) Program

Current Rate Pages

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA
RATE PAGES

OWNERS FORMS						TENANTS FORM		
TERRITORY GROUP 3; $50 DEDUCTIBLE						TERRITORY GROUP 3; $50 DEDUCTIBLE		
Amount of Insurance				Premium		Amount of Insurance		Premium
A	B	C	D	MH(F)-2	MH(F)-3	C	D	MH(F)-4
$2,000	$200	$600	$200	$414.00	$472.00	$2,000	$200	$60.00
3,000	300	900	300	428.00	489.00	3,000	300	74.00
4,000	400	1,200	400	444.00	509.00	4,000	400	88.00
5,000	500	1,500	500	462.00	527.00	5,000	500	101.00
6,000	600	1,800	600	476.00	545.00	6,000	600	115.00
7,000	700	2,100	700	495.00	563.00	7,000	700	130.00
8,000	800	2,400	800	510.00	583.00	8,000	800	142.00
9,000	900	2,700	900	527.00	603.00	9,000	900	157.00
10,000	1,000	3,000	1,000	544.00	619.00	10,000	1,000	170.00
11,000	1,100	3,300	1,100	559.00	638.00	11,000	1,100	184.00
12,000	1,200	3,600	1,200	577.00	658.00	12,000	1,200	197.00
13,000	1,300	3,900	1,300	591.00	677.00	13,000	1,300	210.00
14,000	1,400	4,200	1,400	608.00	694.00	14,000	1,400	223.00
15,000	1,500	4,500	1,500	618.00	708.00	15,000	1,500	236.00
20,000	2,000	6,000	2,000	696.00	801.00	20,000	2,000	302.00
25,000	2,500	7,500	2,500	776.00	897.00	25,000	2,500	368.00
30,000	3,000	9,000	3,000	853.00	990.00	30,000	3,000	434.00
35,000	3,500	10,500	3,500	932.00	1,085.00	35,000	3,500	500.00
40,000	4,000	12,000	4,000	1,011.00	1,177.00	40,000	4,000	565.00
45,000	4,500	13,500	4,500	1,088.00	1,274.00	45,000	4,500	631.00
50,000	5,000	15,000	5,000	1,168.00	1,368.00	50,000	5,000	697.00
55,000	5,500	16,500	5,500	1,246.00	1,463.00			
60,000	6,000	18,000	6,000	1,325.00	1,556.00			
65,000	6,500	19,500	6,500	1,403.00	1,649.00			
70,000	7,000	21,000	7,000	1,480.00	1,744.00			
75,000	7,500	22,500	7,500	1,560.00	1,838.00			
80,000	8,000	24,000	8,000	1,638.00	1,933.00			
85,000	8,500	25,500	8,500	1,718.00	2,027.00			
90,000	9,000	27,000	9,000	1,795.00	2,122.00			
95,000	9,500	28,500	9,500	1,874.00	2,214.00			
100,000	10,000	30,000	10,000	1,953.00	2,311.00			
Each Add'l $1,000				$15.00	$19.00	Each Add'l $1,000		$13.00

Territory Group 1	Surcharge	48.1%		Territory Group 1	Surcharge	29.4%
Territory Group 2	Surcharge	21.5%		Territory Group 2	Surcharge	23.5%
Territory Group 4	Discount	-12.9%		Territory Group 4	Discount	-12.2%
Territory Group 5	Discount	-22.3%		Territory Group 5	Discount	-22.2%
Territory Group 6	Discount	-41.6%		Territory Group 6	Discount	-25.2%

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   **NORTH CAROLINA**
RATE PAGES

m. Inflation Guard Coverage - Form MH(F)-2 and Form MH(F)-3

When the Limits of Liability on Coverages A, B, C & D are automatically increased in accordance with the provisions of the Inflation Guard Endorsement the annual additional premium shall be developed by applying the following charges to the annual premium for Coverage A.

Amount of Quarterly Increase	Charge
1.0%	1.50%
1.5%	2.25%
2.0%	3.00%
Each Add'l 0.5%	Add 0.75%

Minimum Annual Premium $1.00. Additional premium for three year policies shall be three times the annual premium.

Attach Endorsement **MH(F) 50** Mobile Homeowners Inflation Guard.

n. Personal Property Replacement Cost - Form MH(F)-2 and Form MH(F)-3

When Coverage C is extended to include full cost of repair or replacement without deduction for depreciation the additional premium shall be developed as follows:

- Manual charge to increase Coverage C limit to 40% of Coverage A.
- 5% surcharge to the adjusted total base premium (including the additional premium for the increased Coverage C limit). The surcharge shall be applied to the Total Adjusted Basic Premium before credit for optional higher deductible is applied. The minimum additional premium is $20.

Attach Endorsement **MH(F) 51** Personal Property Replacement Cost.

o. Coverage B - Off Premises - Form MH(F)-2 and Form MH(F)-3

When Coverage B - Off Premises is provided to cover other structures which are located off the residence premises, the additional charge shall be $33.

Attach Endorsement **MH(F) 52** Coverage B - Off Premises

p. Windstorm or Hail Exclusion Credit - Territory Groups 1 and 2 only

When the perils of windstorm or hail are excluded from coverage under Section I of the policy the following credits shall be deducted from the applicable basic premium.

FORM	Territory Group 1	Territory Group 2
MH(F) 2 and MH(F) 3	74.1%	70.4%
MH(F) 4	68.7%	49.2%

q. Mobile Home Stated Value Loss Settlement

When coverage is provided on a stated value basis, charge 3% of the premium from the premium rate table.

Attach endorsement **MH(F) 310** Stated Value Loss Settlement.

North Carolina Mobile Homeowners
MH(F) Program

Proposed Rate Pages - Year 1

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA
RATE PAGES

OWNERS FORMS						TENANTS FORM		
TERRITORY GROUP 3; $50 DEDUCTIBLE						TERRITORY GROUP 3; $50 DEDUCTIBLE		
Amount of Insurance				Premium		Amount of Insurance		Premium
A	B	C	D	MH(F)-2	MH(F)-3	C	D	MH(F)-4
$2,000	$200	$600	$200	$532.00 $414.00	$606.00	$2,000	$200	$79.00 $60.00
3,000	300	900	300	550.00 428.00	628.00 489.00	3,000	300	98.00 74.00
4,000	400	1,200	400	570.00 444.00	653.00 509.00	4,000	400	116.00 88.00
5,000	500	1,500	500	593.00 462.00	676.00 527.00	5,000	500	134.00 101.00
6,000	600	1,800	600	611.00 476.00	700.00 545.00	6,000	600	152.00 115.00
7,000	700	2,100	700	635.00 495.00	723.00 563.00	7,000	700	172.00 130.00
8,000	800	2,400	800	655.00 510.00	748.00 583.00	8,000	800	187.00 142.00
9,000	900	2,700	900	676.00 527.00	774.00 603.00	9,000	900	207.00 157.00
10,000	1,000	3,000	1,000	698.00 544.00	795.00 619.00	10,000	1,000	224.00 170.00
11,000	1,100	3,300	1,100	718.00 559.00	819.00 638.00	11,000	1,100	243.00 184.00
12,000	1,200	3,600	1,200	741.00 577.00	844.00 658.00	12,000	1,200	260.00 197.00
13,000	1,300	3,900	1,300	759.00 591.00	869.00 677.00	13,000	1,300	277.00 210.00
14,000	1,400	4,200	1,400	781.00 608.00	891.00 694.00	14,000	1,400	295.00 223.00
15,000	1,500	4,500	1,500	793.00 618.00	909.00 708.00	15,000	1,500	311.00 236.00
20,000	2,000	6,000	2,000	894.00 696.00	1,028.00 801.00	20,000	2,000	398.00 302.00
25,000	2,500	7,500	2,500	996.00 776.00	1,151.00 897.00	25,000	2,500	486.00 368.00
30,000	3,000	9,000	3,000	1,095.00 853.00	1,271.00 990.00	30,000	3,000	573.00 434.00
35,000	3,500	10,500	3,500	1,196.00 932.00	1,393.00 1,085.	35,000	3,500	660.00 500.00
40,000	4,000	12,000	4,000	1,298.00 1,011.0	1,511.00 1,177.	40,000	4,000	745.00 565.00
45,000	4,500	13,500	4,500	1,397.00 1,088.	1,635.00 1,274.	45,000	4,500	832.00 631.00
50,000	5,000	15,000	5,000	1,499.00 1,168.0	1,756.00 1,368.	50,000	5,000	920.00 697.00
55,000	5,500	16,500	5,500	1,599.00 1,246.0	1,878.00 1,463.			
60,000	6,000	18,000	6,000	1,701.00 1,325.0	1,998.00 1,556.			
65,000	6,500	19,500	6,500	1,801.00 1,403.0	2,117.00 1,649.			
70,000	7,000	21,000	7,000	1,900.00 1,480.0	2,238.00 1,744.			
75,000	7,500	22,500	7,500	2,002.00 1,560.0	2,359.00 1,838.			
80,000	8,000	24,000	8,000	2,102.00 1,638.0	2,482.00 1,933.			
85,000	8,500	25,500	8,500	2,205.00 1,718.0	2,601.00 2,027.			
90,000	9,000	27,000	9,000	2,304.00 1,795.0	2,724.00 2,122.			
95,000	9,500	28,500	9,500	2,406.00 1,874.0	2,842.00 2,214.			
100,000	10,000	30,000	10,000	2,507.00 1,953.0	2,967.00 2,311.			
Each Add'l $1,000				$19.00 $15.00	$25.00 $19.00	Each Add'l $1,000		$18.00 $13.00

Territory Group 1	Surcharge	61.6% 48.1%	Territory Group 1	Surcharge 46.4% 29.4%
Territory Group 2	Surcharge	28.8% 21.5%	Territory Group 2	Surcharge 38.6% 23.5%
Territory Group 4	Discount	-18.9% -12.9%	Territory Group 4	Discount -17.9% -12.2%
Territory Group 5	Discount	-30.8% -22.3%	Territory Group 5	Discount -26.7% -22.2%
Territory Group 6	Discount	-51.8% -41.6%	Territory Group 6	Discount -33.5% -25.2%

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA
RATE PAGES

m. Inflation Guard Coverage - Form MH(F)-2 and Form MH(F)-3

When the Limits of Liability on Coverages A, B, C & D are automatically increased in accordance with the provisions of the Inflation Guard Endorsement the annual additional premium shall be developed by applying the following charges to the annual premium for Coverage A.

Amount of Quarterly Increase	Charge
1.0%	1.50%
1.5%	2.25%
2.0%	3.00%
Each Add'l 0.5%	Add 0.75%

Minimum Annual Premium $1.00. Additional premium for three year policies shall be three times the annual premium.

Attach Endorsement **MH(F) 50** Mobile Homeowners Inflation Guard.

n. Personal Property Replacement Cost - Form MH(F)-2 and Form MH(F)-3

When Coverage C is extended to include full cost of repair or replacement without deduction for depreciation the additional premium shall be developed as follows:

- Manual charge to increase Coverage C limit to 40% of Coverage A.
- 5% surcharge to the adjusted total base premium (including the additional premium for the increased Coverage C limit). The surcharge shall be applied to the Total Adjusted Basic Premium before credit for optional higher deductible is applied. The minimum additional premium is $20.

Attach Endorsement **MH(F) 51** Personal Property Replacement Cost.

o. Coverage B - Off Premises - Form MH(F)-2 and Form MH(F)-3

When Coverage B - Off Premises is provided to cover other structures which are located off the residence premises, the additional charge shall be $33.

Attach Endorsement **MH(F) 52** Coverage B - Off Premises

p. Windstorm or Hail Exclusion Credit - Territory Groups 1 and 2 only

When the perils of windstorm or hail are excluded from coverage under Section I of the policy the following credits shall be deducted from the applicable basic premium.

FORM	Territory Group 1	Territory Group 2
MH(F) 2 and MH(F) 3	76.2%~~74.1%~~	71.3%~~70.4%~~
MH(F) 4	54.9%~~68.7%~~	42.7%~~49.2%~~

q. Mobile Home Stated Value Loss Settlement

When coverage is provided on a stated value basis, charge 3% of the premium from the premium rate table.

Attach endorsement **MH(F) 310** Stated Value Loss Settlement.

North Carolina Mobile Homeowners
MH(F) Program

Proposed Rate Pages - Year 2

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA
RATE PAGES

OWNERS FORMS						TENANTS FORM		
TERRITORY GROUP 3; $50 DEDUCTIBLE						TERRITORY GROUP 3; $50 DEDUCTIBLE		
Amount of Insurance				Premium		Amount of Insurance		Premium
A	B	C	D	MH(F)-2	MH(F)-3	C	D	MH(F)-4
$2,000	$200	$600	$200	$654.00 $414.00	$745.00	$2,000	$200	$91.00 $60.00
3,000	300	900	300	676.00 428.00	772.00 489.00	3,000	300	112.00 74.00
4,000	400	1,200	400	701.00 444.00	802.00 509.00	4,000	400	133.00 88.00
5,000	500	1,500	500	729.00 462.00	831.00 527.00	5,000	500	154.00 101.00
6,000	600	1,800	600	751.00 476.00	860.00 545.00	6,000	600	174.00 115.00
7,000	700	2,100	700	781.00 495.00	889.00 563.00	7,000	700	197.00 130.00
8,000	800	2,400	800	805.00 510.00	919.00 583.00	8,000	800	214.00 142.00
9,000	900	2,700	900	831.00 527.00	952.00 603.00	9,000	900	237.00 157.00
10,000	1,000	3,000	1,000	858.00 544.00	977.00 619.00	10,000	1,000	257.00 170.00
11,000	1,100	3,300	1,100	883.00 559.00	1,007.00 638.00	11,000	1,100	279.00 184.00
12,000	1,200	3,600	1,200	910.00 577.00	1,037.00 658.00	12,000	1,200	297.00 197.00
13,000	1,300	3,900	1,300	933.00 591.00	1,068.00 677.00	13,000	1,300	317.00 210.00
14,000	1,400	4,200	1,400	960.00 608.00	1,095.00 694.00	14,000	1,400	338.00 223.00
15,000	1,500	4,500	1,500	974.00 618.00	1,117.00 708.00	15,000	1,500	357.00 236.00
20,000	2,000	6,000	2,000	1,099.00 696.00	1,263.00 801.00	20,000	2,000	456.00 302.00
25,000	2,500	7,500	2,500	1,224.00 776.00	1,415.00 897.00	25,000	2,500	557.00 368.00
30,000	3,000	9,000	3,000	1,346.00 853.00	1,562.00 990.00	30,000	3,000	656.00 434.00
35,000	3,500	10,500	3,500	1,470.00 932.00	1,712.00 1,085.	35,000	3,500	757.00 500.00
40,000	4,000	12,000	4,000	1,596.00 1,011.0	1,857.00 1,177.	40,000	4,000	853.00 565.00
45,000	4,500	13,500	4,500	1,717.00 1,088.0	2,010.00 1,274.	45,000	4,500	954.00 631.00
50,000	5,000	15,000	5,000	1,843.00 1,168.0	2,158.00 1,368.	50,000	5,000	1,054.00 697.00
55,000	5,500	16,500	5,500	1,965.00 1,246.0	2,309.00 1,463.			
60,000	6,000	18,000	6,000	2,090.00 1,325.0	2,456.00 1,556.			
65,000	6,500	19,500	6,500	2,213.00 1,403.0	2,602.00 1,649.			
70,000	7,000	21,000	7,000	2,335.00 1,480.0	2,751.00 1,744.			
75,000	7,500	22,500	7,500	2,461.00 1,560.0	2,900.00 1,838.			
80,000	8,000	24,000	8,000	2,584.00 1,638.0	3,051.00 1,933.			
85,000	8,500	25,500	8,500	2,710.00 1,718.0	3,196.00 2,027.			
90,000	9,000	27,000	9,000	2,832.00 1,795.0	3,348.00 2,122.			
95,000	9,500	28,500	9,500	2,958.00 1,874.0	3,493.00 2,214.			
100,000	10,000	30,000	10,000	3,081.00 1,953.0	3,647.00 2,311.			
Each Add'l $1,000				$24.00 $15.00	$30.00 $19.00	Each Add'l $1,000		$21.00 $13.00

Territory Group 1	Surcharge	82.3% 48.1%	Territory Group 1	Surcharge 80.7% 29.4%
Territory Group 2	Surcharge	28.6% 21.5%	Territory Group 2	Surcharge 48.2% 23.5%
Territory Group 4	Discount	-20.2% -12.9%	Territory Group 4	Discount -20.3% -12.2%
Territory Group 5	Discount	-34.2% -22.3%	Territory Group 5	Discount -28.7% -22.2%
Territory Group 6	Discount	-57.7% -41.6%	Territory Group 6	Discount -35.6% -25.2%

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA
RATE PAGES

m. <u>Inflation Guard Coverage - Form MH(F)-2 and Form MH(F)-3</u>

When the Limits of Liability on Coverages A, B, C & D are automatically increased in accordance with the provisions of the Inflation Guard Endorsement the annual additional premium shall be developed by applying the following charges to the annual premium for Coverage A.

Amount of Quarterly Increase	Charge
1.0%	1.50%
1.5%	2.25%
2.0%	3.00%
Each Add'l 0.5%	Add 0.75%

Minimum Annual Premium $1.00. Additional premium for three year policies shall be three times the annual premium.

Attach Endorsement **MH(F) 50** Mobile Homeowners Inflation Guard.

n. <u>Personal Property Replacement Cost - Form MH(F)-2 and Form MH(F)-3</u>

When Coverage C is extended to include full cost of repair or replacement without deduction for depreciation the additional premium shall be developed as follows:

- Manual charge to increase Coverage C limit to 40% of Coverage A.
- 5% surcharge to the adjusted total base premium (including the additional premium for the increased Coverage C limit). The surcharge shall be applied to the Total Adjusted Basic Premium before credit for optional higher deductible is applied. The minimum additional premium is $20.

Attach Endorsement **MH(F) 51** Personal Property Replacement Cost.

o. <u>Coverage B - Off Premises - Form MH(F)-2 and Form MH(F)-3</u>

When Coverage B - Off Premises is provided to cover other structures which are located off the residence premises, the additional charge shall be $33.

Attach Endorsement **MH(F) 52** Coverage B - Off Premises

p. <u>Windstorm or Hail Exclusion Credit - Territory Groups 1 and 2 only</u>

When the perils of windstorm or hail are excluded from coverage under Section I of the policy the following credits shall be deducted from the applicable basic premium.

FORM	Territory Group 1	Territory Group 2
MH(F) 2 and MH(F) 3	76.2%~~74.1%~~	71.3%~~70.4%~~
MH(F) 4	54.9%~~68.7%~~	42.7%~~49.2%~~

q. <u>Mobile Home Stated Value Loss Settlement</u>

When coverage is provided on a stated value basis, charge 3% of the premium from the premium rate table.

Attach endorsement **MH(F) 310** Stated Value Loss Settlement.

North Carolina Mobile Homeowners
MH(F) Program

Proposed Rate Pages - Year 3

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA
RATE PAGES

OWNERS FORMS						TENANTS FORM		
TERRITORY GROUP 3; $50 DEDUCTIBLE						TERRITORY GROUP 3; $50 DEDUCTIBLE		
Amount of Insurance				Premium		Amount of Insurance		Premium
A	B	C	D	MH(F)-2	MH(F)-3	C	D	MH(F)-4
$2,000	$200	$600	$200	$798.00 $414.00	$910.00	$2,000	$200	$104.00 $60.00
3,000	300	900	300	825.00 428.00	942.00 489.00	3,000	300	128.00 74.00
4,000	400	1,200	400	856.00 444.00	979.00 509.00	4,000	400	152.00 88.00
5,000	500	1,500	500	890.00 462.00	1,014.00 527.00	5,000	500	176.00 101.00
6,000	600	1,800	600	916.00 476.00	1,050.00 545.00	6,000	600	199.00 115.00
7,000	700	2,100	700	953.00 495.00	1,085.00 563.00	7,000	700	225.00 130.00
8,000	800	2,400	800	982.00 510.00	1,121.00 583.00	8,000	800	245.00 142.00
9,000	900	2,700	900	1,014.00 527.00	1,161.00 603.00	9,000	900	271.00 157.00
10,000	1,000	3,000	1,000	1,047.00 544.00	1,193.00 619.00	10,000	1,000	294.00 170.00
11,000	1,100	3,300	1,100	1,077.00 559.00	1,229.00 638.00	11,000	1,100	319.00 184.00
12,000	1,200	3,600	1,200	1,110.00 577.00	1,265.00 658.00	12,000	1,200	339.00 197.00
13,000	1,300	3,900	1,300	1,139.00 591.00	1,304.00 677.00	13,000	1,300	363.00 210.00
14,000	1,400	4,200	1,400	1,171.00 608.00	1,336.00 694.00	14,000	1,400	386.00 223.00
15,000	1,500	4,500	1,500	1,189.00 618.00	1,363.00 708.00	15,000	1,500	408.00 236.00
20,000	2,000	6,000	2,000	1,341.00 696.00	1,542.00 801.00	20,000	2,000	521.00 302.00
25,000	2,500	7,500	2,500	1,494.00 776.00	1,727.00 897.00	25,000	2,500	637.00 368.00
30,000	3,000	9,000	3,000	1,643.00 853.00	1,906.00 990.00	30,000	3,000	750.00 434.00
35,000	3,500	10,500	3,500	1,794.00 932.00	2,090.00 1,085.	35,000	3,500	865.00 500.00
40,000	4,000	12,000	4,000	1,948.00 1,011.0	2,266.00 1,177.	40,000	4,000	975.00 565.00
45,000	4,500	13,500	4,500	2,096.00 1,088.0	2,453.00 1,274.	45,000	4,500	1,091.00 631.00
50,000	5,000	15,000	5,000	2,249.00 1,168.0	2,634.00 1,368.	50,000	5,000	1,205.00 697.00
55,000	5,500	16,500	5,500	2,398.00 1,246.0	2,818.00 1,463.			
60,000	6,000	18,000	6,000	2,550.00 1,325.0	2,997.00 1,556.			
65,000	6,500	19,500	6,500	2,701.00 1,403.0	3,176.00 1,649.			
70,000	7,000	21,000	7,000	2,849.00 1,480.0	3,357.00 1,744.			
75,000	7,500	22,500	7,500	3,003.00 1,560.0	3,539.00 1,838.			
80,000	8,000	24,000	8,000	3,153.00 1,638.0	3,724.00 1,933.			
85,000	8,500	25,500	8,500	3,307.00 1,718.0	3,901.00 2,027.			
90,000	9,000	27,000	9,000	3,456.00 1,795.0	4,086.00 2,122.			
95,000	9,500	28,500	9,500	3,610.00 1,874.0	4,263.00 2,214.			
100,000	10,000	30,000	10,000	3,760.00 1,953.0	4,451.00 2,311.			
Each Add'l $1,000				$29.00 $15.00	$36.00 $19.00	Each Add'l $1,000		$24.00 $13.00

Territory Group 1	Surcharge	107.2% 48.1%	Territory Group 1	Surcharge 117.6% 29.4
Territory Group 2	Surcharge	29.1% 21.5%	Territory Group 2	Surcharge 56.8% 23.5%
Territory Group 4	Discount	-24.8% -12.9%	Territory Group 4	Discount -22.6% -12.2%
Territory Group 5	Discount	-37.3% -22.3%	Territory Group 5	Discount -30.7% -22.2%
Territory Group 6	Discount	-63.2% -41.6%	Territory Group 6	Discount -38.1% -25.2%

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA
RATE PAGES

m. Inflation Guard Coverage - Form MH(F)-2 and Form MH(F)-3

When the Limits of Liability on Coverages A, B, C & D are automatically increased in accordance with the provisions of the Inflation Guard Endorsement the annual additional premium shall be developed by applying the following charges to the annual premium for Coverage A.

Amount of Quarterly Increase	Charge
1.0%	1.50%
1.5%	2.25%
2.0%	3.00%
Each Add'l 0.5%	Add 0.75%

Minimum Annual Premium $1.00. Additional premium for three year policies shall be three times the annual premium.

Attach Endorsement **MH(F) 50** Mobile Homeowners Inflation Guard.

n. Personal Property Replacement Cost - Form MH(F)-2 and Form MH(F)-3

When Coverage C is extended to include full cost of repair or replacement without deduction for depreciation the additional premium shall be developed as follows:

- Manual charge to increase Coverage C limit to 40% of Coverage A.
- 5% surcharge to the adjusted total base premium (including the additional premium for the increased Coverage C limit). The surcharge shall be applied to the Total Adjusted Basic Premium before credit for optional higher deductible is applied. The minimum additional premium is $20.

Attach Endorsement **MH(F) 51** Personal Property Replacement Cost.

o. Coverage B - Off Premises - Form MH(F)-2 and Form MH(F)-3

When Coverage B - Off Premises is provided to cover other structures which are located off the residence premises, the additional charge shall be $33.

Attach Endorsement **MH(F) 52** Coverage B - Off Premises

p. Windstorm or Hail Exclusion Credit - Territory Groups 1 and 2 only

When the perils of windstorm or hail are excluded from coverage under Section I of the policy the following credits shall be deducted from the applicable basic premium.

FORM	Territory Group 1	Territory Group 2
MH(F) 2 and MH(F) 3	76.2%~~74.1%~~	71.3%~~70.4%~~
MH(F) 4	54.9%~~68.7%~~	42.7%~~49.2%~~

q. Mobile Home Stated Value Loss Settlement

When coverage is provided on a stated value basis, charge 3% of the premium from the premium rate table.

Attach endorsement **MH(F) 310** Stated Value Loss Settlement.

North Carolina Mobile Homeowners
MH(F) Program

Section C

Exhibits Supporting the Rate Indications

North Carolina Mobile Homeowners
MH(F) Program

Exhibits Supporting the Rate Indications

Table of Contents

North Carolina
Mobile Homeowners
MH(F)

Determination of Statewide Indicated Rate Changes

		Owners	Tenants
(1)	Total Base Class Loss Cost	$318.19	$53.33
(2)	(a) Fixed Expense per Policy	$60.33	$8.25
	(b) Variable Expense per Policy	20.7%	20.7%
	(c) Profit	6.5%	6.5%
	(d) Contingencies	1.0%	1.0%
	(e) Policyholder Dividends	0.5%	0.5%
(3)	Base Rate excl. Reinsurance Cost; = [(1) + (2a)] / [1 - (2b) - (2c) - (2d) - (2e)]	$530.88	$86.36
(4)	Compensation for Assessment Risk per Policy	$9.55	$1.18
(5)	Net Cost of Reinsurance per Policy	$399.64	$14.59
(6)	Indicated Manual Base Rate; = (3) + (4) + (5)	$940.07	$102.12
(7)	Net Deviations	5.0%	5.0%
(8)	Required Base Rate; = (6) / [1 - (7)]	$989.54	$107.49
(9)	Average Current Base Rate	$540.76	$66.57
(10)	Indicated Rate Change; = (8) / (9) - 1	83.0%	61.5%
(11)	Proposed Rate Change - Year 1	24.9%	24.8%
(12)	Proposed Base Rate - Year 1; = (9) x [1 + (11)]	$675.19	$83.09
(13)	Proposed Rate Change - Year 2	21.2%	13.9%
(14)	Proposed Base Rate - Year 2; = (12) x [1 + (13)]	$818.11	$94.62
(15)	Proposed Rate Change - Year 3	21.0%	13.6%
(16)	Proposed Base Rate - Year 3; = (14) x [1 + (15)]	$989.54	$107.49

(1) From Section C, Pages 2 and 4
(2a), (9) From Section C, Page 45
(2b) From Section C, Page 46
(2c) See pre-filed testimony from G. Zanjani for support of the Profit provision
(2d) See pre-filed testimony from P. Anderson for support of the Contingencies provision
(2e) From Section C, Page 48
(4) From Section C, Page 49
(5) From Section C, Pages 50 and
(7) From Section C, Page 52
(11), (13), (15) Reflect selections by the North Carolina Rate Bureau

North Carolina
Mobile Homeowners
MH(F) - Owners

Determination of Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5) = [(1) x (2)] / [(3) x (4)]	(6)	(7) = (5) / (6)	(8)
Accident Year	Non-Hurricane Ultimate Loss and LAE	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	$24,456,165	1.357	69,528	1.336	$357.30	1.562	$228.79	10.0%
2019	19,928,768	1.307	68,559	1.287	295.04	1.607	183.61	15.0%
2020	20,936,634	1.258	63,944	1.240	332.07	1.660	200.07	20.0%
2021	20,049,092	1.211	61,497	1.195	330.40	1.713	192.82	25.0%
2022	18,819,097	1.166	60,737	1.151	313.76	1.819	172.47	30.0%

(9) Weighted Average Non-Hurricane Base Class Loss Cost: $190.38

(10) Credibility: 100.0%

(11) Complement of Credibility: $242.56

(12) Credibility-Weighted Loss Cost: $190.38

(13) Modeled Hurricane Base Class Loss Cost: $127.81

(14) Total Base Class Loss Cost: $318.19

(1) From Section C, Page 3

(2) From Section C, Page 34

(3) Based on data provided by member companies

(4) From Section C, Page 39

(6) From Section C, Page 40

(9) Average of (7) based on the weights in (8)

(10) Based on the Square Root Rule using a Full-Credibility Standard of 30,000 earned house years

(11) From Section C, Page 42

(12) = (9) x (10) + (11) x [1 - (10)]

(13) From Section C, Page 43

(14) = (12) + (13)

North Carolina
Mobile Homeowners
MH(F) - Owners

Determination of Non-Hurricane Ultimate Loss & LAE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$20,465,156	$0	$1,178,010	1.096	1.006	$21,247,754	1.000	$21,247,754	1.151	$24,456,165
2019	16,853,090	1,136,437	0	1.096	1.006	17,314,307	1.000	17,314,307	1.151	19,928,768
2020	21,080,945	4,399,530	136,827	1.096	1.006	18,226,404	0.998	18,189,951	1.151	20,936,634
2021	15,902,682	0	59,450	1.096	1.006	17,453,754	0.998	17,418,847	1.151	20,049,092
2022	17,931,461	3,222,002	0	1.096	1.006	16,204,729	1.009	16,350,215	1.151	18,819,097

(1) Based on data provided by member companies

(2) From Section C, Page 29

(3) From Section C, Page 31

(4) From Section C, Page 28

(5) From Section C, Page 30

(6) = [(1) - (2) - (3)] x [(4) + (5) - 1]

(7) From Section C, Page 32

(9) From Section C, Page 47

North Carolina
Mobile Homeowners
MH(F) - Tenants

Determination of Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5) = [(1) x (2)] / [(3) x (4)]	(6)	(7) = (5) / (6)	(8)
Accident Year	Non-Hurricane Ultimate Loss and LAE	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	$52,841	1.125	632	1.112	$84.61	2.631	$32.16	20.0%
2019	1,922	1.129	641	1.100	3.08	2.626	1.17	20.0%
2020	5,345	1.133	672	1.088	8.28	2.617	3.17	20.0%
2021	23,099	1.137	682	1.076	35.82	2.700	13.27	20.0%
2022	23,384	1.142	716	1.064	35.02	2.741	12.78	20.0%

(9) Weighted Average Non-Hurricane Base Class Loss Cost: $12.51

(10) Credibility: 12.9%

(11) Complement of Credibility: $54.82

(12) Credibility-Weighted Loss Cost: $49.35

(13) Modeled Hurricane Base Class Loss Cost: $3.97

(14) Total Base Class Loss Cost: $53.33

(1) From Section C, Page 5

(2) From Section C, Page 34

(3) Based on data provided by member companies

(4) From Section C, Page 39

(6) From Section C, Page 40

(9) Average of (7) based on the weights in (8)

(10) Based on the Square Root Rule using a Full-Credibility Standard of 200,000 earned house years

(11) From Section C, Page 42

(12) = (9) x (10) + (11) x [1 - (10)]

(13) From Section C, Page 43

(14) = (12) + (13)

North Carolina
Mobile Homeowners
MH(F) - Tenants

Determination of Non-Hurricane Ultimate Loss & LAE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$41,673	$0	$0	1.096	1.006	$45,909	1.000	$45,909	1.151	$52,841
2019	1,648	132	0	1.096	1.006	1,670	1.000	1,670	1.151	1,922
2020	4,223	0	0	1.096	1.006	4,653	0.998	4,644	1.151	5,345
2021	34,660	0	16,406	1.096	1.006	20,109	0.998	20,069	1.151	23,099
2022	18,278	0	0	1.096	1.006	20,135	1.009	20,316	1.151	23,384

(1) Based on data provided by member companies
(2) From Section C, Page 29
(3) From Section C, Page 31
(4) From Section C, Page 28
(5) From Section C, Page 30
(6) = [(1) - (2) - (3)] x [(4) + (5) - 1]
(7) From Section C, Page 32
(9) From Section C, Page 47

North Carolina
Mobile Homeowners
MH(F) - Owners

Determination of Indicated Rate Change by Territory Group

	(1)	(2)	(3) = (2)(Statewide) / (2) x (3)(Statewide)	(4)	(5)	(6) = [(1) + (3)] / [1 - (4)]	(7)	(8)	(9) = (6) + (7) + (8)	(10)	(11) = (9) + (10)	(12) = (11) / (5) - 1	(13)	(14)	(15)	(16)
Territory Group	Indicated Base Class Loss Cost	2022 Average Rating Factor	Trended Fixed Expenses	Variable Expenses	Average Current Base Rate	Indicated Net Base Rate	Compensation for Assessment Risk	Net Cost of Reinsurance	Indicated Base Rate Excluding Deviation	Net Deviation Per Exposure	Indicated Required Base Class Rate	Indicated Rate Change	Balanced Indicated Rate Change	Proposed Year 1 Rate Change	Proposed Year 2 Rate Change	Proposed Year 3 Rate Change
1	$865.65	1.837	$59.75	28.7%	$1,028.75	$1,297.90	$18.16	$1,622.23	$2,938.29	$154.65	$3,092.94	200.6%	200.9%	49.0%	42.1%	42.1%
2	540.28	1.488	73.76	28.7%	828.20	861.21	14.62	1,008.17	1,884.00	99.16	1,983.16	139.5%	139.7%	49.0%	26.8%	26.8%
3	406.87	1.720	63.82	28.7%	688.76	660.15	12.16	701.40	1,373.71	72.30	1,446.01	109.9%	110.1%	35.0%	25.0%	24.5%
4	335.17	1.913	57.36	28.7%	590.27	550.53	10.42	445.56	1,006.51	52.97	1,059.49	79.5%	79.6%	25.0%	23.0%	16.8%
5	301.94	1.857	59.09	28.7%	520.80	506.35	9.19	312.30	827.84	43.57	871.42	67.3%	67.5%	19.0%	18.6%	18.6%
6	196.54	1.897	57.87	28.7%	387.76	356.81	6.85	100.10	463.75	24.41	488.16	25.9%	26.0%	9.0%	8.0%	7.0%
Statewide	$318.19	1.819	$60.33	28.7%	$540.76	$530.88	$9.55	$399.64	$940.07	$49.48	$989.54	82.8%	83.0%	24.9%	21.2%	21.0%

(1) From Section C, Page 7

(2), (5) From Section C, Page 41

(3) Statewide from Section C, Page 1

(4) From Section C, Page 46. Includes Commission and Brokerage expense; Taxes, Licenses, and Fees; Profit; Contingencies; and Policyholder Dividends

(7) = (5) x 0.018; Reflects 1.4% Compensation for Assessment Risk provision, adjusted for expenses from Section C, Page 49, Row (5)

(8) From Section C, Page 50

(10) = (9) / [1 - 0.05] - (9); Reflects 5% Net Deviation selected on Section C, Page 52

(12) Statewide based on premium-weighted average using the 2022 earned premium at current manual level

(13) = [1 + (12)] / [1 + (12) Statewide] x [1 + (13) Statewide]; Statewide (13) from Section C, Page 1

(14), (15), (16) From Section A, Page 2

North Carolina
Mobile Homeowners
MH(F) - Owners

Determination of Indicated Base Class Loss Cost by Territory Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
						= (4) / (4) Statewide			= (7) + (8)	= (9) / (9) Statewide	
Territory Group	Non-Hurricane Base Class Loss Cost	Five Year Earned House Years	Credibility	Credibility Weighted Non-Hurricane Base Class Loss Cost	2022 Earned House Years	Indicated Relativity	Indicated Non-Hurricane Base Class Loss Cost	Modeled Hurricane Base Class Loss Cost	Total Loss Cost	Indicated Relativity	Indicated Base Class Loss Cost
1	$193.07	19,304	80.2%	$192.54	3,433	1.021	$194.35	$677.41	$871.76	2.721	$865.65
2	185.36	12,982	65.8%	187.08	2,014	0.992	188.84	355.25	544.09	1.698	540.28
3	202.26	67,092	100.0%	202.26	12,809	1.072	204.16	205.58	409.74	1.279	406.87
4	215.15	35,271	100.0%	215.15	6,629	1.141	217.17	120.36	337.53	1.053	335.17
5	222.97	41,046	100.0%	222.97	7,461	1.182	225.06	79.00	304.07	0.949	301.94
6	166.86	148,570	100.0%	166.86	28,392	0.885	168.43	29.50	197.93	0.618	196.54
Statewide	$190.38	324,265		$188.61	60,737	1.000	$190.38	$127.81	$320.43	1.000	$318.19

(1) From Section C, Pages 9 through 14; Statewide from Section C, Page 2

(2), (5) Based on data provided by member companies

(3) Based on the Square Root Rule using a Full-Credibility Standard of 30,000 earned house years

(4) = (1) x (3) + (1) Statewide x [1 - (3)]

(7) = (6) x (7) Statewide; (7) Statewide From Section C, Page 2

(8) From Section C, Page 8

(11) = (10) x (11) Statewide; (11) Statewide From Section C, Page 2

North Carolina
Mobile Homeowners
MH(F) - Owners

Determination of Modeled Hurricane Base Class Loss Cost by Territory Group

| | (1) | (2) | (3) | (4) | (5) |
| | | | | | = (1) / [(2) x (3) x (4)] |
Territory Group	Trended Modeled Hurricane Loss & LAE	2022 Earned House Years	2022 Premium Trend Factor	2022 Average Rating Factor	Modeled Hurricane Base Class Loss Cost
1	$4,735,016	3,306	1.151	1.837	$677.41
2	1,157,371	1,902	1.151	1.488	355.25
3	4,945,434	12,154	1.151	1.720	205.58
4	1,662,227	6,271	1.151	1.913	120.36
5	1,178,265	6,976	1.151	1.857	79.00
6	1,738,281	26,997	1.151	1.897	29.50
Statewide	$15,416,593	57,607	1.151	1.819	$127.81

(1) Provided by Aon

(2) Based on data provided by member companies; excludes exposures where amount of insurance is unavailable

(3) From Section C, Page 39

(4) From Section C, Page 41

North Carolina
Mobile Homeowners
MH(F) - Owners
Territory Group 1

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$1,033,250	$0	$0	1.096	1.006	$1,138,283	1.000	$1,138,283	1.151	$1,310,164
2019	687,838	8,126	0	1.096	1.006	748,807	1.000	748,807	1.151	861,877
2020	764,150	76,457	0	1.096	1.006	757,600	0.998	756,085	1.151	870,253
2021	1,571,471	0	0	1.096	1.006	1,731,217	0.998	1,727,755	1.151	1,988,646
2022	958,808	95,335	0	1.096	1.006	951,249	1.009	959,789	1.151	1,104,717

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.357	4,064	1.336	$327.49	$6,320,435	$3,789,534	1.668	$196.35	10.0%
2019	1.307	4,049	1.287	216.03	6,573,579	3,829,674	1.716	125.86	15.0%
2020	1.258	4,123	1.240	214.06	6,996,978	3,931,182	1.780	120.27	20.0%
2021	1.211	3,634	1.195	554.54	6,194,928	3,453,389	1.794	309.13	25.0%
2022	1.166	3,433	1.151	325.83	6,246,669	3,401,051	1.837	177.40	30.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $193.07

(1), (12) Based on data provided by member companies
(2) From Section C, Page 15
(3) From Section C, Page 16
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
     See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
     See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Owners
Territory Group 2

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$576,884	$0	$0	1.096	1.006	$635,527	1.000	$635,527	1.151	$731,491
2019	402,291	5,932	0	1.096	1.006	436,650	1.000	436,650	1.151	502,585
2020	495,879	84,128	0	1.096	1.006	453,606	0.998	452,699	1.151	521,057
2021	453,499	0	0	1.096	1.006	499,599	0.998	498,600	1.151	573,888
2022	761,785	99,427	0	1.096	1.006	729,689	1.009	736,240	1.151	847,413

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.357	2,835	1.336	$262.09	$3,074,851	$2,154,301	1.427	$183.62	10.0%
2019	1.307	2,764	1.287	184.56	3,118,358	2,112,484	1.476	125.02	15.0%
2020	1.258	2,792	1.240	189.26	3,276,172	2,145,599	1.527	123.95	20.0%
2021	1.211	2,577	1.195	225.70	2,973,800	1,977,292	1.504	150.07	25.0%
2022	1.166	2,014	1.151	426.19	2,344,183	1,575,602	1.488	286.45	30.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $185.36

(1), (12) Based on data provided by member companies
(2) From Section C, Page 15
(3) From Section C, Page 16
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Owners
Territory Group 3

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$5,182,848	$0	$1,048,066	1.096	1.006	$4,555,097	1.000	$4,555,097	1.151	$5,242,917
2019	3,436,914	193,556	0	1.096	1.006	3,573,058	1.000	3,573,058	1.151	4,112,589
2020	4,617,619	799,716	9,372	1.096	1.006	4,195,681	0.998	4,187,290	1.151	4,819,570
2021	2,956,665	0	6,591	1.096	1.006	3,249,960	0.998	3,243,460	1.151	3,733,223
2022	3,851,443	720,246	0	1.096	1.006	3,449,495	1.009	3,480,464	1.151	4,006,015

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.357	14,252	1.336	$373.68	$12,860,799	$8,572,143	1.500	$249.07	10.0%
2019	1.307	14,061	1.287	296.87	13,098,351	8,535,258	1.535	193.45	15.0%
2020	1.258	13,180	1.240	370.88	12,545,544	8,014,387	1.565	236.92	20.0%
2021	1.211	12,791	1.195	295.78	12,660,405	7,823,189	1.618	182.77	25.0%
2022	1.166	12,809	1.151	316.71	14,388,809	8,367,591	1.720	184.18	30.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $202.26

(1), (12) Based on data provided by member companies
(2) From Section C, Page 15
(3) From Section C, Page 16
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Owners
Territory Group 4

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$2,153,852	$0	$33,863	1.096	1.006	$2,335,493	1.000	$2,335,493	1.151	$2,688,153
2019	3,067,758	277,359	0	1.096	1.006	3,074,053	1.000	3,074,053	1.151	3,538,235
2020	2,374,786	656,719	11,224	1.096	1.006	1,880,349	0.998	1,876,589	1.151	2,159,954
2021	1,858,013	0	0	1.096	1.006	2,046,886	0.998	2,042,793	1.151	2,351,254
2022	2,653,463	579,040	0	1.096	1.006	2,285,295	1.009	2,305,812	1.151	2,653,990

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.357	7,534	1.336	$362.42	$6,235,090	$3,845,926	1.621	$223.55	10.0%
2019	1.307	7,437	1.287	482.89	6,419,478	3,836,705	1.673	288.61	15.0%
2020	1.258	6,949	1.240	315.26	6,186,456	3,587,218	1.725	182.80	20.0%
2021	1.211	6,722	1.195	354.47	6,269,846	3,492,774	1.795	197.46	25.0%
2022	1.166	6,629	1.151	405.45	7,077,179	3,699,087	1.913	211.92	30.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $215.15

(1), (12) Based on data provided by member companies
(2) From Section C, Page 15
(3) From Section C, Page 16
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Owners
Territory Group 5

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$2,303,205	$0	$14,936	1.096	1.006	$2,520,879	1.000	$2,520,879	1.151	$2,901,532
2019	2,424,124	204,763	0	1.096	1.006	2,444,968	1.000	2,444,968	1.151	2,814,158
2020	3,195,423	741,515	0	1.096	1.006	2,703,357	0.998	2,697,951	1.151	3,105,341
2021	2,944,314	0	0	1.096	1.006	3,243,615	0.998	3,237,127	1.151	3,725,934
2022	2,541,470	515,206	0	1.096	1.006	2,232,241	1.009	2,252,282	1.151	2,592,377

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.357	8,927	1.336	$330.17	$6,173,116	$3,900,744	1.583	$208.63	10.0%
2019	1.307	8,794	1.287	324.81	6,328,229	3,883,870	1.629	199.35	15.0%
2020	1.258	8,119	1.240	387.91	6,068,909	3,587,308	1.692	229.29	20.0%
2021	1.211	7,745	1.195	487.51	6,049,243	3,450,047	1.753	278.04	25.0%
2022	1.166	7,461	1.151	351.86	6,746,357	3,632,301	1.857	189.44	30.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $222.97

(1), (12) Based on data provided by member companies
(2) From Section C, Page 15
(3) From Section C, Page 16
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Owners
Territory Group 6

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$9,153,377	$0	$81,145	1.096	1.006	$9,994,457	1.000	$9,994,457	1.151	$11,503,620
2019	6,831,194	446,702	0	1.096	1.006	7,033,499	1.000	7,033,499	1.151	8,095,557
2020	9,626,345	2,040,995	116,231	1.096	1.006	8,228,381	0.998	8,211,924	1.151	9,451,925
2021	5,795,030	0	52,859	1.096	1.006	6,325,883	0.998	6,313,231	1.151	7,266,529
2022	7,093,930	1,212,749	0	1.096	1.006	6,479,025	1.009	6,537,193	1.151	7,524,310

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.357	31,916	1.336	$366.12	$17,090,199	$10,878,187	1.571	$233.04	10.0%
2019	1.307	31,453	1.287	261.24	17,502,485	10,810,214	1.619	161.35	15.0%
2020	1.258	28,781	1.240	333.07	16,611,729	9,875,136	1.682	198.00	20.0%
2021	1.211	28,027	1.195	262.75	17,050,386	9,683,014	1.761	149.22	25.0%
2022	1.166	28,392	1.151	268.36	19,847,988	10,465,054	1.897	141.50	30.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $166.86

(1), (12) Based on data provided by member companies
(2) From Section C, Page 15
(3) From Section C, Page 16
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
    See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
    See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Owners

Allocation of Excess Wind Loss & ALAE to Territory Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)

| | Distribution of Wind & Hail Losses by Territory Group by Year | | | | | | |
Accident Year	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6	Statewide
2018	3.524%	3.146%	17.982%	12.313%	13.776%	49.260%	100.000%
2019	0.715%	0.522%	17.032%	24.406%	18.018%	39.307%	100.000%
2020	1.738%	1.912%	18.177%	14.927%	16.854%	46.391%	100.000%
2021	4.362%	2.047%	21.485%	16.708%	16.902%	38.495%	100.000%
2022	2.959%	3.086%	22.354%	17.971%	15.990%	37.640%	100.000%

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		= (1) x (8)	= (2) x (8)	= (3) x (8)	= (4) x (8)	= (5) x (8)	= (6) x (8)

| | | Excess Wind Loss & ALAE | | | | | |
Accident Year	Statewide	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6
2018	$0	$0	$0	$0	$0	$0	$0
2019	1,136,437	8,126	5,932	193,556	277,359	204,763	446,702
2020	4,399,530	76,457	84,128	799,716	656,719	741,515	2,040,995
2021	0	0	0	0	0	0	0
2022	3,222,002	95,335	99,427	720,246	579,040	515,206	1,212,749

(1) - (6) Based on data provided by member companies

(7) = Sum of (1) through (6)

(8) From Section C, Page 29

North Carolina
Mobile Homeowners
MH(F) - Owners

Allocation of Excess Flood Loss & ALAE to Territory Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)

Distribution of Flood Losses by Territory Group by Year

Accident Year	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6	Statewide
2018	0.000%	0.000%	88.969%	2.875%	1.268%	6.888%	100.000%
2019	8.374%	0.000%	11.352%	0.000%	2.750%	77.524%	100.000%
2020	0.000%	0.000%	6.850%	8.203%	0.000%	84.947%	100.000%
2021	0.000%	0.000%	11.086%	0.000%	0.000%	88.914%	100.000%
2022	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		= (1) x (8)	= (2) x (8)	= (3) x (8)	= (4) x (8)	= (5) x (8)	= (6) x (8)

Excess Flood Loss & ALAE

Accident Year	Statewide	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6
2018	$1,178,010	$0	$0	$1,048,066	$33,863	$14,936	$81,145
2019	0	0	0	0	0	0	0
2020	136,827	0	0	9,372	11,224	0	116,231
2021	59,450	0	0	6,591	0	0	52,859
2022	0	0	0	0	0	0	0

(1) - (6) Based on data provided by member companies

(7) = Sum of (1) through (6)

(8) From Section C, Page 31

North Carolina
Mobile Homeowners
MH(F) - Tenants

Determination of Indicated Rate Change by Territory Group

	(1)	(2)	(3) = (2)(Statewide) / (2) x (3)(Statewide)	(4)	(5)	(6) = [(1) + (3)] / [1 - (4)]	(7)	(8)	(9) = (6) + (7) + (8)	(10)	(11) = (9) + (10)	(12) = (11) / (5) - 1	(13)	(14)	(15)	(16)
Territory Group	Indicated Base Class Loss Cost	2022 Average Rating Factor	Trended Fixed Expenses	Variable Expenses	Average Current Base Rate	Indicated Net Base Rate	Compensation for Assessment Risk	Net Cost of Reinsurance	Indicated Base Rate Excluding Deviation	Net Deviation Per Exposure	Indicated Required Base Class Rate	Indicated Rate Change	Balanced Indicated Rate Change	Proposed Year 1 Rate Change	Proposed Year 2 Rate Change	Proposed Year 3 Rate Change
1	$113.93	1.891	$11.96	28.7%	$104.42	$176.56	$1.84	$129.73	$308.13	$16.22	$324.35	210.6%	211.3%	49.0%	44.6%	44.6%
2	75.43	2.024	11.17	28.7%	99.56	121.45	1.76	93.73	216.95	11.42	228.36	129.4%	129.9%	49.0%	24.2%	24.2%
3	63.82	2.664	8.48	28.7%	80.73	101.41	1.43	37.16	139.99	7.37	147.36	82.5%	82.9%	35.3%	16.3%	16.3%
4	52.56	2.875	7.86	28.7%	70.88	84.75	1.25	20.64	106.64	5.61	112.25	58.4%	58.7%	26.0%	12.2%	12.2%
5	50.70	2.904	7.79	28.7%	62.76	82.03	1.11	12.12	95.26	5.01	100.27	59.8%	60.1%	26.5%	12.5%	12.5%
6	48.88	2.773	8.15	28.7%	60.42	79.99	1.07	3.62	84.68	4.46	89.13	47.5%	47.9%	19.0%	12.0%	10.9%
Statewide	$53.33	2.741	$8.25	28.7%	$66.57	$86.36	$1.18	$14.59	$102.12	$5.37	$107.49	61.1%	61.5%	24.8%	13.9%	13.6%

(1) From Section C, Page 18

(2), (5) From Section C, Page 41

(3) Statewide from Section C, Page 1

(4) From Section C, Page 46. Includes Commission and Brokerage expense; Taxes, Licenses, and Fees; Profit; Contingencies; and Policyholder Dividends

(7) = (5) x 0.018; Reflects 1.4% Compensation for Assessment Risk provision, adjusted for expenses from Section C, Page 49, Row (5)

(8) From Section C, Page

(10) = (9) / [1 - 0.05] - (9); Reflects 5% Net Deviation selected on Section C, Page 52

(12) Statewide based on premium-weighted average using the 2022 earned premium at current manual level

(13) = [1 + (12)] / [1 + (12) Statewide] x [1 + (13) Statewide]; Statewide (13) from Section C, Page 1

(14), (15), (16) From Section A, Page 2

North Carolina
Mobile Homeowners
MH(F) - Tenants

Determination of Indicated Base Class Loss Cost by Territory Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
						= (4) / (4) Statewide			= (7) + (8)	= (9) / (9) Statewide	
Territory Group	Non-Hurricane Base Class Loss Cost	Five Year Earned House Years	Credibility	Credibility Weighted Non-Hurricane Base Class Loss Cost	2022 Earned House Years	Indicated Relativity	Indicated Non-Hurricane Base Class Loss Cost	Modeled Hurricane Base Class Loss Cost	Total Loss Cost	Indicated Relativity	Indicated Base Class Loss Cost
1	$203.35	57	1.7%	$15.72	13	1.281	$63.23	$51.51	$114.74	2.136	$113.93
2	0.00	51	1.6%	12.31	13	1.003	49.50	26.46	75.96	1.414	75.43
3	31.82	572	5.3%	13.54	99	1.104	54.46	9.81	64.27	1.197	63.82
4	1.15	499	5.0%	11.94	112	0.973	48.03	4.91	52.93	0.986	52.56
5	0.00	353	4.2%	11.98	76	0.977	48.20	2.87	51.06	0.951	50.70
6	7.10	1,811	9.5%	11.99	404	0.978	48.24	0.99	49.23	0.917	48.88
Statewide	$12.51	3,343		$12.27	716	1.000	$49.35	$3.97	$53.70	1.000	$53.33

(1) From Section C, Pages 20 through 25; Statewide from Section C, Page 4

(2), (5) Based on data provided by member companies

(3) Based on the Square Root Rule using a Full-Credibility Standard of 200,000 earned house years

(4) = (1) x (3) + (1) Statewide x [1 - (3)]

(7) = (6) x (7) Statewide; (7) Statewide From Section C, Page 4

(8) From Section C, Page 19

(11) = (10) x (11) Statewide; (11) Statewide From Section C, Page 4

North Carolina
Mobile Homeowners
MH(F) - Tenants

Determination of Modeled Hurricane Base Class Loss Cost by Territory Group

	(1)	(2)	(3)	(4)	(5)
					= (1) / [(2) x (3) x (4)]
Territory Group	Trended Modeled Hurricane Loss & LAE	2022 Earned House Years	2022 Premium Trend Factor	2022 Average Rating Factor	Modeled Hurricane Base Class Loss Cost
1	$1,306	13	1.064	1.891	$51.51
2	713	13	1.064	2.024	26.46
3	2,758	99	1.064	2.664	9.81
4	1,675	112	1.064	2.875	4.91
5	673	76	1.064	2.904	2.87
6	1,179	404	1.064	2.773	0.99
Statewide	$8,304	716	1.064	2.741	$3.97

(1) Provided by Aon

(2) Based on data provided by member companies; excludes exposures where amount of insurance is unavailable

(3) From Section C, Page 39

(4) From Section C, Page 41

North Carolina
Mobile Homeowners
MH(F) - Tenants
Territory Group 1

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$0	$0	$0	1.096	1.006	$0	1.000	$0	1.151	$0
2019	0	0	0	1.096	1.006	0	1.000	0	1.151	0
2020	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2021	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2022	17,650	0	0	1.096	1.006	19,444	1.009	19,619	1.151	22,581

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.125	10	1.112	$0.00	$3,417	$1,036	3.298	$0.00	20.0%
2019	1.129	12	1.100	0.00	3,542	1,219	2.906	0.00	20.0%
2020	1.133	12	1.088	0.00	2,351	1,248	1.884	0.00	20.0%
2021	1.137	11	1.076	0.00	2,098	1,102	1.904	0.00	20.0%
2022	1.142	13	1.064	1,922.23	2,488	1,316	1.891	1,016.74	20.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $203.35

(1), (12) Based on data provided by member companies
(2) From Section C, Page 26
(3) From Section C, Page 27
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
    See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
    See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Tenants
Territory Group 2

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$0	$0	$0	1.096	1.006	$0	1.000	$0	1.151	$0
2019	0	0	0	1.096	1.006	0	1.000	0	1.151	0
2020	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2021	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2022	0	0	0	1.096	1.006	0	1.009	0	1.151	0

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.125	9	1.112	$0.00	$2,602	$917	2.838	$0.00	20.0%
2019	1.129	9	1.100	0.00	2,708	928	2.918	0.00	20.0%
2020	1.133	9	1.088	0.00	2,186	934	2.340	0.00	20.0%
2021	1.137	11	1.076	0.00	2,328	1,109	2.099	0.00	20.0%
2022	1.142	13	1.064	0.00	2,520	1,245	2.024	0.00	20.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $0.00

(1), (12) Based on data provided by member companies
(2) From Section C, Page 26
(3) From Section C, Page 27
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Tenants
Territory Group 3

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$36,491	$0	$0	1.096	1.006	$40,200	1.000	$40,200	1.151	$46,270
2019	714	132	0	1.096	1.006	641	1.000	641	1.151	737
2020	1,905	0	0	1.096	1.006	2,098	0.998	2,094	1.151	2,410
2021	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2022	0	0	0	1.096	1.006	0	1.009	0	1.151	0

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.125	122	1.112	$382.40	$25,420	$9,889	2.571	$148.76	20.0%
2019	1.129	121	1.100	6.27	25,634	9,756	2.628	2.39	20.0%
2020	1.133	121	1.088	20.80	25,601	9,758	2.624	7.93	20.0%
2021	1.137	109	1.076	0.00	23,385	8,787	2.661	0.00	20.0%
2022	1.142	99	1.064	0.00	21,337	8,008	2.664	0.00	20.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $31.82

(1), (12) Based on data provided by member companies
(2) From Section C, Page 26
(3) From Section C, Page 27
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
    See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
    See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Tenants
Territory Group 4

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$0	$0	$0	1.096	1.006	$0	1.000	$0	1.151	$0
2019	0	0	0	1.096	1.006	0	1.000	0	1.151	0
2020	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2021	1,210	0	0	1.096	1.006	1,333	0.998	1,330	1.151	1,531
2022	0	0	0	1.096	1.006	0	1.009	0	1.151	0

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.125	100	1.112	$0.00	$18,313	$7,072	2.590	$0.00	20.0%
2019	1.129	94	1.100	0.00	16,943	6,644	2.550	0.00	20.0%
2020	1.133	96	1.088	0.00	17,662	6,811	2.593	0.00	20.0%
2021	1.137	98	1.076	16.54	19,980	6,936	2.881	5.74	20.0%
2022	1.142	112	1.064	0.00	22,745	7,911	2.875	0.00	20.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $1.15

(1), (12) Based on data provided by member companies
(2) From Section C, Page 26
(3) From Section C, Page 27
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Tenants
Territory Group 5

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$0	$0	$0	1.096	1.006	$0	1.000	$0	1.151	$0
2019	0	0	0	1.096	1.006	0	1.000	0	1.151	0
2020	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2021	0	0	0	1.096	1.006	0	0.998	0	1.151	0
2022	0	0	0	1.096	1.006	0	1.009	0	1.151	0

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.125	69	1.112	$0.00	$11,204	$4,302	2.604	$0.00	20.0%
2019	1.129	62	1.100	0.00	10,271	3,912	2.626	0.00	20.0%
2020	1.133	72	1.088	0.00	12,416	4,490	2.765	0.00	20.0%
2021	1.137	75	1.076	0.00	13,531	4,704	2.876	0.00	20.0%
2022	1.142	76	1.064	0.00	13,854	4,771	2.904	0.00	20.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost: $0.00

(1), (12) Based on data provided by member companies
(2) From Section C, Page 26
(3) From Section C, Page 27
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Tenants
Territory Group 6

Determination of Non-Hurricane Base Class Loss Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (6) x (7)	(9)	(10) = (8) x (9)
Accident Year	Non-Hurricane Incurred Loss & ALAE	Excess Wind Loss & ALAE	Excess Flood Loss & ALAE	Excess Wind Loss Factor	Excess Flood Loss Factor	Adjusted Non-Hurricane Incurred Loss & ALAE	Loss & ALAE Development Factor	Non-Hurricane Ultimate Loss & ALAE	ULAE Factor	Non-Hurricane Ultimate Loss and LAE
2018	$5,182	$0	$0	1.096	1.006	$5,709	1.000	$5,709	1.151	$6,571
2019	934	0	0	1.096	1.006	1,029	1.000	1,029	1.151	1,185
2020	2,319	0	0	1.096	1.006	2,555	0.998	2,549	1.151	2,934
2021	33,450	0	16,406	1.096	1.006	18,777	0.998	18,739	1.151	21,569
2022	628	0	0	1.096	1.006	691	1.009	697	1.151	803

	(11)	(12)	(13)	(14) = [(10) x (11)] / [(12) x (13)]	(15)	(16)	(17) (15) / (16)	(18) (14) / (17)	(19)
Accident Year	Loss Trend Factor	Earned House Years	Premium Trend Factor	Trended Average Loss Cost	Earned Premium at Current Manual Level	Earned Premium at Current Base	Average Rating Factor	Trended Base Class Loss Cost	Accident Year Weights
2018	1.125	322	1.112	$20.63	$51,362	$19,478	2.637	$7.82	20.0%
2019	1.129	343	1.100	3.55	54,283	20,717	2.620	1.35	20.0%
2020	1.133	363	1.088	8.43	57,953	21,906	2.646	3.19	20.0%
2021	1.137	379	1.076	60.23	61,562	22,875	2.691	22.38	20.0%
2022	1.142	404	1.064	2.13	67,765	24,435	2.773	0.77	20.0%

(20) Weighted Average Non-Hurricane Base Class Loss Cost:　　$7.10

(1), (12) Based on data provided by member companies
(2) From Section C, Page 26
(3) From Section C, Page 27
(4) From Section C, Page 28
(5) From Section C, Page 30
(7) From Section C, Page 32
(9) From Section C, Page 47
(11) From Section C, Page 34
(13) From Section C, Page 39
(15), (16) Based on data provided by member companies and the extension of exposures method
　　See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
　　See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.
(20) Average of (18) based on the weights in (19)

North Carolina
Mobile Homeowners
MH(F) - Tenants

Allocation of Excess Wind Loss & ALAE to Territory Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)

| | Distribution of Wind & Hail Losses by Territory Group by Year | | | | | | |
Accident Year	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6	Statewide
2018	0.000%	0.000%	0.000%	0.000%	0.000%	100.000%	100.000%
2019	0.000%	0.000%	100.000%	0.000%	0.000%	0.000%	100.000%
2020	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2021	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2022	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		= (1) x (8)	= (2) x (8)	= (3) x (8)	= (4) x (8)	= (5) x (8)	= (6) x (8)

| | Excess Wind Loss & ALAE | | | | | | |
Accident Year	Statewide	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6
2018	$0	$0	$0	$0	$0	$0	$0
2019	132	0	0	132	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0

(1) - (6) Based on data provided by member companies
(7) = Sum of (1) through (6)
(8) From Section C, Page 29

North Carolina
Mobile Homeowners
MH(F) - Tenants

Allocation of Excess Flood Loss & ALAE to Territory Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)

Distribution of Flood Losses by Territory Group by Year

Accident Year	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6	Statewide
2018	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2019	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2020	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
2021	0.000%	0.000%	0.000%	0.000%	0.000%	100.000%	100.000%
2022	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		= (1) x (8)	= (2) x (8)	= (3) x (8)	= (4) x (8)	= (5) x (8)	= (6) x (8)

Excess Flood Loss & ALAE

Accident Year	Statewide	Territory Group 1	Territory Group 2	Territory Group 3	Territory Group 4	Territory Group 5	Territory Group 6
2018	$0	$0	$0	$0	$0	$0	$0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	16,406	0	0	0	0	0	16,406
2022	0	0	0	0	0	0	0

(1) - (6) Based on data provided by member companies

(7) = Sum of (1) through (6)

(8) From Section C, Page 31

North Carolina
Mobile Homeowners
MH(F)

Derivation of Excess Wind Loss & ALAE Factor (Excluding Hurricane Losses)

	(1)	(2)	(3)	(4) = (1) - (2) - (3)	(5) = (2) / (4)	(6) = Min [(5), (13)]	(7) = (6) - Avg (6)	(8) = (4) x (7)	(9) = (5) - (6)	(10) = (4) x (9)	(11) = (8) + (10)
Accident Year	Total Incurred Losses Excl Liability	Incurred Wind Losses	Incurred Flood Losses	Total Losses Excl Wind & Flood	Wind Losses / Total Losses Excl Wind & Flood	Capped Wind Ratio	Capped Excess Wind Ratio	Capped Excess Wind Losses	Excess Wind Ratio Above Cap	Excess Wind Losses Above Cap	Total Non-Hurricane Excess Wind Losses
1998	$15,273,548	$5,415,029	$96,857	$9,761,662	0.555	0.555	0.032	$312,373	0.000	$0	$312,373
1999	30,024,153	19,985,129	71,028	9,967,996	2.005	2.005	1.482	14,772,571	0.000	0	14,772,571
2000	16,567,551	2,638,389	7,068	13,922,094	0.190	0.190	0.000	0	0.000	0	0
2001	18,079,627	1,212,549	16,556	16,850,522	0.072	0.072	0.000	0	0.000	0	0
2002	19,163,073	2,186,891	0	16,976,182	0.129	0.129	0.000	0	0.000	0	0
2003	23,896,208	8,723,033	149,507	15,023,668	0.581	0.581	0.058	871,373	0.000	0	871,373
2004	17,677,162	2,423,276	237,721	15,016,165	0.161	0.161	0.000	0	0.000	0	0
2005	13,081,778	3,035,427	20,148	10,026,202	0.303	0.303	0.000	0	0.000	0	0
2006	14,247,179	3,481,603	113,920	10,651,655	0.327	0.327	0.000	0	0.000	0	0
2007	14,282,549	2,655,248	0	11,627,301	0.228	0.228	0.000	0	0.000	0	0
2008	18,637,634	5,258,658	22,057	13,356,919	0.394	0.394	0.000	0	0.000	0	0
2009	19,030,275	5,000,380	33,978	13,995,917	0.357	0.357	0.000	0	0.000	0	0
2010	17,217,172	4,275,270	317,560	12,624,342	0.339	0.339	0.000	0	0.000	0	0
2011	33,751,759	19,245,054	131,253	14,375,452	1.339	1.339	0.816	11,730,369	0.000	0	11,730,369
2012	21,069,821	7,677,326	42,649	13,349,846	0.575	0.575	0.052	694,192	0.000	0	694,192
2013	18,270,546	5,449,973	167,285	12,653,288	0.431	0.431	0.000	0	0.000	0	0
2014	18,092,408	4,362,963	13,270	13,716,175	0.318	0.318	0.000	0	0.000	0	0
2015	19,427,667	6,779,839	65,205	12,582,623	0.539	0.539	0.016	201,322	0.000	0	201,322
2016	24,881,226	7,720,741	111,801	17,048,684	0.453	0.453	0.000	0	0.000	0	0
2017	17,018,251	5,154,881	31,839	11,831,530	0.436	0.436	0.000	0	0.000	0	0
2018	19,430,436	5,848,030	1,219,512	12,362,894	0.473	0.473	0.000	0	0.000	0	0
2019	15,884,369	6,145,887	67,349	9,671,133	0.635	0.635	0.112	1,083,167	0.000	0	1,083,167
2020	19,672,332	9,434,291	211,241	10,026,801	0.941	0.941	0.418	4,191,203	0.000	0	4,191,203
2021	14,941,592	4,388,239	152,581	10,400,772	0.422	0.422	0.000	0	0.000	0	0
2022	17,026,562	7,903,691	0	9,122,871	0.866	0.866	0.343	3,129,145	0.000	0	3,129,145
Total	$476,644,878	$156,401,797	$3,300,385	$316,942,695	0.493			$36,985,713		$0	$36,985,713
Average:					0.523	0.523	0.133		0.000		

(12)	Median of Column (5):	0.431	
(13)	5 x Median of Column (5):	2.155	
(14)	**Excess Wind Loss Factor:**	**1.096**	

(1), (2), (3) Based on data provided by member companies

(14) = 1 + [(Avg(7) + Avg(9)) / (1.0 + Avg(6) - Avg(7))]

North Carolina
Mobile Homeowners
MH(F)

Derivation of Excess Wind Loss & ALAE by Policy Form (Excluding Hurricane)

	(1)	(2)	(3)	(4) = (2) + (3)	(5) = (2) / (4)	(6) = (3) / (4)	(7)	(8)	(9) = (8) / (7)	(10) = (1) x (5) x (9)	(11) = (1) x (6) x (9)
	Total Non-Hurricane Excess Wind	Incurred Wind Losses			Distribution of Wind Losses by Policy Form		Total Incurred Losses	Total Incurred Loss & ALAE	Non-Hurricane	Allocated Non-Hurricane Excess Wind Loss & ALAE by Form	
Accident Year	Losses	Owners	Tenants	Total	Owners	Tenants	Excl Liability	Excl Liability	ALAE Factor	Owners	Tenants
2018	$0	$5,843,672	$4,358	$5,848,030	99.93%	0.07%	$19,430,436	$20,345,581	1.047	$0	$0
2019	1,083,167	6,145,173	714	6,145,887	99.99%	0.01%	15,884,369	16,667,501	1.049	1,136,437	132
2020	4,191,203	9,434,291	0	9,434,291	100.00%	0.00%	19,672,332	20,650,162	1.050	4,399,530	0
2021	0	4,388,239	0	4,388,239	100.00%	0.00%	14,941,592	15,567,652	1.042	0	0
2022	3,129,145	7,903,691	0	7,903,691	100.00%	0.00%	17,026,562	17,531,824	1.030	3,222,002	0
Total	$8,403,514	$33,715,066	$5,072	$33,720,137			$86,955,291	$90,762,720		$8,757,969	$132

(1) From Section C, Page 28, Column (11)
(2), (3), (7), (8) Based on data provided by member companies

North Carolina
Mobile Homeowners
MH(F)

Derivation of Excess Flood Loss & ALAE Factor (Excluding Hurricane Losses)

	(1)	(2)	(3)	(4) = (1) - (2) - (3)	(5) = (3) / (4)	(6) = Min [(5), (13)]	(7) = (6) - Avg (6)	(8) = (4) x (7)	(9) = (5) - (6)	(10) = (4) x (9)	(11) = (8) + (10)
Accident Year	Total Incurred Losses Excl Liability	Incurred Wind Losses	Incurred Flood Losses	Total Losses Excl Wind & Flood	Flood Losses / Total Losses Excl Wind & Flood	Capped Flood Ratio	Capped Excess Flood Ratio	Capped Excess Flood Losses	Excess Flood Ratio Above Cap	Excess Flood Losses Above Cap	Total Excess Flood Losses
1998	$15,273,548	$5,415,029	$96,857	$9,761,662	0.010	0.010	0.002	$19,523	0.000	$0	$19,523
1999	30,024,153	19,985,129	71,028	9,967,996	0.007	0.007	0.000	0	0.000	0	0
2000	16,567,551	2,638,389	7,068	13,922,094	0.001	0.001	0.000	0	0.000	0	0
2001	18,079,627	1,212,549	16,556	16,850,522	0.001	0.001	0.000	0	0.000	0	0
2002	19,163,073	2,186,891	0	16,976,182	0.000	0.000	0.000	0	0.000	0	0
2003	23,896,208	8,723,033	149,507	15,023,668	0.010	0.010	0.002	30,047	0.000	0	30,047
2004	17,677,162	2,423,276	237,721	15,016,165	0.016	0.016	0.008	120,129	0.000	0	120,129
2005	13,081,778	3,035,427	20,148	10,026,202	0.002	0.002	0.000	0	0.000	0	0
2006	14,247,179	3,481,603	113,920	10,651,655	0.011	0.011	0.003	31,955	0.000	0	31,955
2007	14,282,549	2,655,248	0	11,627,301	0.000	0.000	0.000	0	0.000	0	0
2008	18,637,634	5,258,658	22,057	13,356,919	0.002	0.002	0.000	0	0.000	0	0
2009	19,030,275	5,000,380	33,978	13,995,917	0.002	0.002	0.000	0	0.000	0	0
2010	17,217,172	4,275,270	317,560	12,624,342	0.025	0.025	0.017	214,614	0.000	0	214,614
2011	33,751,759	19,245,054	131,253	14,375,452	0.009	0.009	0.001	14,375	0.000	0	14,375
2012	21,069,821	7,677,326	42,649	13,349,846	0.003	0.003	0.000	0	0.000	0	0
2013	18,270,546	5,449,973	167,285	12,653,288	0.013	0.013	0.005	63,266	0.000	0	63,266
2014	18,092,408	4,362,963	13,270	13,716,175	0.001	0.001	0.000	0	0.000	0	0
2015	19,427,667	6,779,839	65,205	12,582,623	0.005	0.005	0.000	0	0.000	0	0
2016	24,881,226	7,720,741	111,801	17,048,684	0.007	0.007	0.000	0	0.000	0	0
2017	17,018,251	5,154,881	31,839	11,831,530	0.003	0.003	0.000	0	0.000	0	0
2018	19,430,436	5,848,030	1,219,512	12,362,894	0.099	0.035	0.027	333,798	0.064	791,225	1,125,023
2019	15,884,369	6,145,887	67,349	9,671,133	0.007	0.007	0.000	0	0.000	0	0
2020	19,672,332	9,434,291	211,241	10,026,801	0.021	0.021	0.013	130,348	0.000	0	130,348
2021	14,941,592	4,388,239	152,581	10,400,772	0.015	0.015	0.007	72,805	0.000	0	72,805
2022	17,026,562	7,903,691	0	9,122,871	0.000	0.000	0.000	0	0.000	0	0
Total	$476,644,878	$156,401,797	$3,300,385	$316,942,695	0.010			$1,030,863		$791,225	$1,822,088
				Average:	0.011	0.008	0.003		0.003		

(12)   Median of Column (5):   0.007
(13)   5 x Median of Column (5):   0.035

(14)   **Excess Flood Loss Factor:**   **1.006**

(1), (2), (3) Based on data provided by member companies
   (14) = 1 + [(Avg(7) + Avg(9)) / (1.0 + Avg(6) - Avg(7))]

North Carolina
Mobile Homeowners
MH(F)

Derivation of Excess Flood Loss & ALAE by Policy Form (Excluding Hurricane)

	(1)	(2)	(3)	(4) = (2) + (3)	(5) = (2) / (4)	(6) = (3) / (4)	(7)	(8)	(9) = (8) / (7)	(10) = (1) x (5) x (9)	(11) = (1) x (6) x (9)
	Total Non-Hurricane Excess Flood	Incurred Flood Losses			Distribution of Flood Losses by Policy Form		Total Incurred Losses	Total Incurred Loss & ALAE	Non-Hurricane	Allocated Non-Hurricane Excess Flood Loss & ALAE by Form	
Accident Year	Losses	Owners	Tenants	Total	Owners	Tenants	Excl Liability	Excl Liability	ALAE Factor	Owners	Tenants
2018	$1,125,023	$1,219,512	$0	$1,219,512	100.00%	0.00%	$19,430,436	$20,345,581	1.047	$1,178,010	$0
2019	0	67,349	0	67,349	100.00%	0.00%	15,884,369	16,667,501	1.049	0	0
2020	130,348	211,241	0	211,241	100.00%	0.00%	19,672,332	20,650,162	1.050	136,827	0
2021	72,805	119,581	33,000	152,581	78.37%	21.63%	14,941,592	15,567,652	1.042	59,450	16,406
2022	0	0	0	0	0.00%	0.00%	17,026,562	17,531,824	1.030	0	0
Total	$1,328,177	$1,617,683	$33,000	$1,650,683			$86,955,291	$90,762,720		$1,374,288	$16,406

(1) From Section C, Page 30, Column (11)
(2), (3), (7), (8) Based on data provided by member companies

North Carolina
Mobile Homeowners
MH(F) - Owners and Tenants

Derivation of Non-Catastrophe Incurred Loss and ALAE Development Factors - All Companies Combined

Months of Development

	15	27	39	51	63	75	87	99	111	123	135	147
2011	22,439,669	22,246,011	22,343,887	22,491,186	22,502,021	22,502,021	22,508,297	22,508,347	22,508,347	22,508,347	22,508,347	22,508,347
2012	18,605,047	19,117,418	18,962,882	18,991,027	18,991,476	18,997,061	18,997,297	18,997,297	18,997,297	18,997,297	18,994,406	
2013	16,907,972	17,283,200	17,227,934	17,249,084	17,245,036	17,244,862	17,244,862	17,244,862	17,244,862	17,244,862		
2014	16,953,904	17,260,648	17,329,043	17,326,338	17,341,994	17,345,263	17,345,548	17,345,548	17,345,548			
2015	16,668,047	17,035,582	17,105,983	17,078,689	17,084,206	17,084,426	17,086,411	17,086,411				
2016	17,429,670	17,446,008	17,370,343	17,558,036	17,551,811	17,557,260	17,554,960					
2017	15,639,715	15,884,165	15,788,483	15,745,561	15,808,028	15,822,482						
2018	17,692,689	17,550,288	17,577,513	17,534,606	17,534,863							
2019	14,104,046	14,552,688	14,594,335	14,575,584								
2020	15,950,647	16,182,963	16,213,235									
2021	14,647,511	14,680,218										
2022	14,029,382											

Loss Development Factors

	15-27	27-39	39-51	51-63	63-75	75-87	87-99	99-111	111-123	123-135	135-147
2011	0.991	1.004	1.007	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2012	1.028	0.992	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
2013	1.022	0.997	1.001	1.000	1.000	1.000	1.000	1.000	1.000		
2014	1.018	1.004	1.000	1.001	1.000	1.000	1.000	1.000			
2015	1.022	1.004	0.998	1.000	1.000	1.000	1.000				
2016	1.001	0.996	1.011	1.000	1.000	1.000					
2017	1.016	0.994	0.997	1.004	1.001						
2018	0.992	1.002	0.998	1.000							
2019	1.032	1.003	0.999								
2020	1.015	1.002									
2021	1.002										
Avg	1.013	1.000	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Wtd Avg	1.012	1.000	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
5-Yr Avg	1.011	0.999	1.001	1.001	1.000	1.000	1.000	-	-	-	-
5-Yr Wtd Avg	1.010	0.999	1.001	1.001	1.000	1.000	1.000	-	-	-	-
5-Yr Excl Hi/Lo	1.011	1.000	0.998	1.000	1.000	1.000	1.000	-	-	-	-
Selected	1.011	1.000	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Cumulative	1.009	0.998	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

North Carolina
Mobile Homeowners
MH(F) - Owners and Tenants

Derivation of Non-Catastrophe Reported Claims Development Factors - All Companies Combined

Months of Development

	15	27	39	51	63	75	87	99	111	123	135	147
2011	5,083	5,236	5,262	5,265	5,269	5,269	5,269	5,270	5,270	5,270	5,270	5,270
2012	4,250	4,429	4,451	4,463	4,465	4,468	4,468	4,468	4,468	4,468	4,468	
2013	3,919	4,055	4,081	4,085	4,091	4,093	4,093	4,093	4,093	4,093		
2014	3,908	4,061	4,079	4,085	4,089	4,090	4,092	4,092	4,092			
2015	3,855	4,027	4,052	4,065	4,067	4,067	4,069	4,069				
2016	3,564	3,760	3,779	3,787	3,788	3,790	3,793					
2017	3,168	3,352	3,370	3,375	3,379	3,383						
2018	3,907	4,133	4,151	4,150	4,154							
2019	2,900	3,017	3,032	3,042								
2020	3,452	3,630	3,660									
2021	2,590	2,741										
2022	2,843											

Claim Development Factors

	15-27	27-39	39-51	51-63	63-75	75-87	87-99	99-111	111-123	123-135	135-147
2011	1.030	1.005	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2012	1.042	1.005	1.003	1.000	1.001	1.000	1.000	1.000	1.000	1.000	
2013	1.035	1.006	1.001	1.001	1.000	1.000	1.000	1.000	1.000		
2014	1.039	1.004	1.001	1.001	1.000	1.000	1.000	1.000			
2015	1.045	1.006	1.003	1.000	1.000	1.000	1.000				
2016	1.055	1.005	1.002	1.000	1.001	1.001					
2017	1.058	1.005	1.001	1.001	1.001						
2018	1.058	1.004	1.000	1.001							
2019	1.040	1.005	1.003								
2020	1.052	1.008									
2021	1.058										
Avg	1.047	1.005	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Wtd Avg	1.045	1.005	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
5-Yr Avg	1.053	1.006	1.002	1.001	1.000	1.000	1.000	-	-	-	-
5-Yr Wtd Avg	1.053	1.006	1.002	1.001	1.000	1.000	1.000	-	-	-	-
5-Yr Excl Hi/Lo	1.056	1.005	1.002	1.001	1.000	1.000	1.000	-	-	-	-
Selected	1.056	1.005	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Cumulative	1.064	1.008	1.003	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000

North Carolina
Mobile Homeowners
MH(F)

Derivation of Loss Trend Factors

Owners

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			= (2) - (1), in years		= (4) - (2), in years			
Accident Year	Average Date of Claim	End Date of Experience Period	Experience Period	Trend-to Date	Projection Period	Selected Experience Period Loss Trend	Selected Projection Period Loss Trend	Loss Trend Factor
2018	7/1/2018	12/31/2022	4.50	10/1/2025	2.75	3.9%	5.0%	1.357
2019	7/1/2019	12/31/2022	3.50	10/1/2025	2.75	3.9%	5.0%	1.307
2020	7/1/2020	12/31/2022	2.50	10/1/2025	2.75	3.9%	5.0%	1.258
2021	7/1/2021	12/31/2022	1.50	10/1/2025	2.75	3.9%	5.0%	1.211
2022	7/1/2022	12/31/2022	0.50	10/1/2025	2.75	3.9%	5.0%	1.166

Tenants

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
			= (10) - (9), in years		= (12) - (10), in years			
Accident Year	Average Date of Claim	End Date of Experience Period	Experience Period	Trend-to Date	Projection Period	Selected Experience Period Loss Trend	Selected Projection Period Loss Trend	Loss Trend Factor
2018	7/1/2018	12/31/2022	4.50	10/1/2025	2.75	-0.4%	5.0%	1.125
2019	7/1/2019	12/31/2022	3.50	10/1/2025	2.75	-0.4%	5.0%	1.129
2020	7/1/2020	12/31/2022	2.50	10/1/2025	2.75	-0.4%	5.0%	1.133
2021	7/1/2021	12/31/2022	1.50	10/1/2025	2.75	-0.4%	5.0%	1.137
2022	7/1/2022	12/31/2022	0.50	10/1/2025	2.75	-0.4%	5.0%	1.142

(4), (12) Based on a proposed effective date of October 1, 2024; rates assumed to be in effect for 1 year

(6), (7), (14), (15) From Section C, Pages 35 and 36

(8) = [1 + (6)] ^ (3) x [1 + (7)] ^ (5)

(16) = [1 + (14)] ^ (11) x [1 + (15)] ^ (13)

North Carolina
Mobile Homeowners
MH(F) - Owners

Determination of Non-Catastrophe Loss and ALAE Trends

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				= (2) x (3) / (1)			= (5) x (6) / [(2) x (3)]
Accident Year Ending	Earned Exposures	Reported Claims	Development Factor to Ultimate	Ultimate Frequency	Incurred Loss & ALAE	Development Factor to Ultimate	Ultimate Severity
2017-4	60,620	4,510	1.000	7.44%	$16,456,615	1.000	$3,649
2018-1	60,698	4,404	1.000	7.26%	15,736,920	1.000	3,573
2018-2	60,761	4,335	1.000	7.13%	15,412,868	1.000	3,555
2018-3	60,822	4,545	1.000	7.47%	15,203,171	1.000	3,345
2018-4	60,863	4,965	1.000	8.16%	15,815,470	1.000	3,185
2019-1	60,861	4,846	1.000	7.96%	16,368,817	1.000	3,377
2019-2	60,868	4,679	1.000	7.69%	15,747,545	1.000	3,364
2019-3	60,877	4,414	1.001	7.26%	14,820,734	1.000	3,355
2019-4	60,587	3,989	1.001	6.59%	13,735,124	1.000	3,440
2020-1	60,095	4,031	1.001	6.72%	13,546,400	0.999	3,355
2020-2	59,107	4,165	1.001	7.06%	14,437,437	0.999	3,458
2020-3	57,750	4,224	1.002	7.33%	15,374,864	0.998	3,628
2020-4	56,588	4,388	1.002	7.77%	16,254,058	0.998	3,689
2021-1	55,806	4,449	1.003	7.99%	17,136,200	0.998	3,833
2021-2	55,636	4,186	1.003	7.55%	16,979,453	0.998	4,034
2021-3	55,903	4,033	1.004	7.24%	16,890,448	0.998	4,162
2021-4	56,364	3,715	1.005	6.62%	15,780,821	0.998	4,218
2022-1	56,777	3,620	1.018	6.49%	15,317,506	1.001	4,162
2022-2	57,152	3,691	1.030	6.65%	15,691,792	1.003	4,141
2022-3	57,530	3,800	1.043	6.89%	15,722,104	1.006	3,991
2022-4	57,903	3,816	1.056	6.96%	15,858,562	1.009	3,971

	Annual Exponential Trend		Annual Exponential Trend
21-Point Trend (2017-4 to 2022-4):	-1.9%	21-Point Trend (2017-4 to 2022-4):	4.6%
17-Point Trend (2018-4 to 2022-4):	-3.1%	17-Point Trend (2018-4 to 2022-4):	7.2%
13-Point Trend (2019-4 to 2022-4):	-1.2%	13-Point Trend (2019-4 to 2022-4):	7.3%
(8) Credibility:	100.0%	(9) Credibility:	100.0%

	Selected Frequency Trend		Selected Severity Trend	Pure Premium Trend
Experience Period:	**-2.0%**	Experience Period:	**6.0%**	3.9%
Projection Period:	**0.0%**	Projection Period:	**5.0%**	5.0%

(1), (2), (5) Based on data provided by member companies
(2), (5) Adjusted to exclude catastrophe losses
(3), (6) From Section C, Page 37
(8) Based on 352,926 exposures in the experience period, a full credibility standard of 20,000 exposures, and the square root rule
(9) Based on 25,383 claims during the experience period, a full credibility standard of 1,082 claims, and the square root rule

North Carolina
Mobile Homeowners
MH(F) - Tenants

Determination of Non-Catastrophe Loss and ALAE Trends

	(1)	(2)	(3)	(4) = (2) x (3) / (1)	(5)		(6)	(7)	(8) = (6) x (7) / [(2) x (3)]	(9)
Accident Year Ending	Earned Exposures	Reported Claims	Development Factor to Ultimate	Ultimate Frequency	MH(C) Personal Effects Frequency		Incurred Loss & ALAE	Development Factor to Ultimate	Ultimate Severity	MH(C) Personal Effects Severity
2017-4	588	13	1.000	2.21%	1.46%		$9,227	1.000	$710	$2,470
2018-1	617	13	1.000	2.11%	1.42%		10,475	1.000	806	2,572
2018-2	630	10	1.000	1.59%	1.41%		5,405	1.000	541	2,678
2018-3	632	5	1.000	0.79%	1.50%		7,314	1.000	1,463	2,585
2018-4	632	4	1.000	0.63%	1.53%		10,271	1.000	2,568	2,328
2019-1	634	2	1.000	0.32%	1.52%		7,396	1.000	3,697	2,223
2019-2	636	3	1.000	0.47%	1.47%		8,109	1.000	2,702	2,298
2019-3	638	3	1.001	0.47%	1.35%		6,043	1.000	2,013	2,445
2019-4	641	2	1.001	0.31%	1.29%		1,648	1.000	823	2,564
2020-1	649	3	1.001	0.46%	1.27%		3,553	0.999	1,182	2,783
2020-2	658	3	1.001	0.46%	1.24%		2,839	0.999	944	2,735
2020-3	667	2	1.002	0.30%	1.25%		1,905	0.998	949	2,835
2020-4	672	3	1.002	0.45%	1.25%		4,223	0.998	1,402	3,070
2021-1	673	2	1.003	0.30%	1.24%		2,319	0.998	1,154	2,902
2021-2	678	2	1.003	0.30%	1.21%		3,529	0.998	1,755	2,992
2021-3	679	4	1.004	0.59%	1.14%		3,979	0.998	988	3,061
2021-4	682	3	1.005	0.44%	1.08%		1,660	0.998	549	3,125
2022-1	687	6	1.018	0.89%	1.11%		1,660	1.001	272	3,457
2022-2	691	6	1.030	0.89%	1.14%		778	1.003	126	3,302
2022-3	701	5	1.043	0.74%	1.18%		328	1.006	63	3,072
2022-4	716	9	1.056	1.33%	1.22%		18,278	1.009	1,940	2,809

	Annual Exponential Trend	Annual Exponential Trend	Credibility- Weighted Trend		Annual Exponential Trend	Annual Exponential Trend	Credibility- Weighted Trend
21-Point Trend (2017-4 to 2022-4):	-10.0%	-6.0%	-6.7%	21-Point Trend (2017-4 to 2022-4):	-24.7%	6.4%	0.9%
17-Point Trend (2018-4 to 2022-4):	21.9%	-6.8%	-2.0%	17-Point Trend (2018-4 to 2022-4):	-44.4%	9.2%	-0.3%
13-Point Trend (2019-4 to 2022-4):	47.4%	-3.8%	4.8%	13-Point Trend (2019-4 to 2022-4):	-40.1%	5.6%	-2.5%
(10) Credibility:	16.8%			(11) Credibility:	17.7%		

	Selected Frequency Trend			Selected Severity Trend	Pure Premium Trend
Experience Period:	-6.0%		Experience Period:	6.0%	-0.4%
Projection Period:	0.0%		Projection Period:	5.0%	5.0%

(1), (2), (6) Based on data provided by member companies
(2), (6) Adjusted to exclude catastrophe losses
(3), (7) From Section C, Page 37
(5), (9) From MH(C) Section C, Page 59
(10) Based on 3,931 exposures in the experience period, a full credibility standard of 140,000 exposures, and the square root rule
(11) Based on 34 claims during the experience period, a full credibility standard of 1,082 claims, and the square root rule

North Carolina
Mobile Homeowners
MH(F)

Interpolation of Cumulative Development Factors

		(1)	(2)	(3)	(4)
		Owners & Tenants			
Accident Year Ending	Months of Development	Cumulative Incurred Loss & ALAE Development Factor		Cumulative Reported Claims Development Factor	
		Selected	Interpolated	Selected	Interpolated
2017-4	75	1.000	1.000	1.000	1.000
2018-1	72		1.000		1.000
2018-2	69		1.000		1.000
2018-3	66		1.000		1.000
2018-4	63	1.000	1.000	1.000	1.000
2019-1	60		1.000		1.000
2019-2	57		1.000		1.000
2019-3	54		1.000		1.001
2019-4	51	1.000	1.000	1.001	1.001
2020-1	48		0.999		1.001
2020-2	45		0.999		1.001
2020-3	42		0.998		1.002
2020-4	39	0.998	0.998	1.002	1.002
2021-1	36		0.998		1.003
2021-2	33		0.998		1.003
2021-3	30		0.998		1.004
2021-4	27	0.998	0.998	1.005	1.005
2022-1	24		1.001		1.018
2022-2	21		1.003		1.030
2022-3	18		1.006		1.043
2022-4	15	1.009	1.009	1.056	1.056

(1) and (3) From Section C, Page 32 and 33, respectively
(2) and (4) Exponentially interpolated

North Carolina
Mobile Homeowners
MH(F)

Determination of Exposure Trends

	(1)	(2)
	Average Amount of Insurance per Policy	
Calendar Year Ending	Owners	Tenants
2017-4	$53,557	$20,828
2018-1	53,962	20,935
2018-2	54,380	20,929
2018-3	54,822	20,897
2018-4	55,281	20,834
2019-1	55,751	20,801
2019-2	56,239	20,835
2019-3	56,739	20,781
2019-4	57,283	20,768
2020-1	57,847	20,758
2020-2	58,474	20,678
2020-3	59,185	20,760
2020-4	59,948	20,894
2021-1	60,702	21,032
2021-2	61,466	21,250
2021-3	62,255	21,428
2021-4	63,092	21,657
2022-1	64,000	21,906
2022-2	65,021	22,121
2022-3	66,156	22,239
2022-4	67,316	22,227
21-Point Trend (2017-4 to 2022-4):	4.6%	1.3%
17-Point Trend (2018-4 to 2022-4):	5.0%	1.9%
13-Point Trend (2019-4 to 2022-4):	5.5%	2.8%
9-Point Trend (2020-4 to 2022-4):	5.9%	3.5%
	Selected Exposure Trends	
Projection Period (from 7/1/22 to 4/1/25):	**6.0%**	**3.5%**

(1), (2) Based on data provided by member companies

Note: Selected Exposure Trends are used to project the latest year's exposure file to the midpoint of the projected experience period for the development of modeled hurricane losses, based on a proposed effective date of October 1, 2024

North Carolina
Mobile Homeowners
MH(F)

Derivation of Premium Trend Factors

Owners

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			= (2) - (1), in years		= (4) - (2), in years			
Accident Year	Average Written Date	End Date of Experience Period	Experience Period	Trend-to Date	Projection Period	Selected Experience Period Premium Trend	Selected Projection Period Premium Trend	Premium Trend Factor
2018	1/1/2018	12/31/2022	5.00	4/1/2025	2.25	3.8%	4.7%	1.336
2019	1/1/2019	12/31/2022	4.00	4/1/2025	2.25	3.8%	4.7%	1.287
2020	1/1/2020	12/31/2022	3.00	4/1/2025	2.25	3.8%	4.7%	1.240
2021	1/1/2021	12/31/2022	2.00	4/1/2025	2.25	3.8%	4.7%	1.195
2022	1/1/2022	12/31/2022	1.00	4/1/2025	2.25	3.8%	4.7%	1.151

Tenants

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
			= (10) - (9), in years		= (12) - (10), in years			
Accident Year	Average Written Date	End Date of Experience Period	Experience Period	Trend-to Date	Projection Period	Selected Experience Period Premium Trend	Selected Projection Period Premium Trend	Premium Trend Factor
2018	1/1/2018	12/31/2022	5.00	4/1/2025	2.25	1.1%	2.3%	1.112
2019	1/1/2019	12/31/2022	4.00	4/1/2025	2.25	1.1%	2.3%	1.100
2020	1/1/2020	12/31/2022	3.00	4/1/2025	2.25	1.1%	2.3%	1.088
2021	1/1/2021	12/31/2022	2.00	4/1/2025	2.25	1.1%	2.3%	1.076
2022	1/1/2022	12/31/2022	1.00	4/1/2025	2.25	1.1%	2.3%	1.064

(4), (12) Based on a proposed effective date of October 1, 2024; rates assumed to be in effect for 1 year

(6), (7), (14), (15) From Section C, Page 40

(8) = [1 + (6)] ^ (3) x [1 + (7)] ^ (5)

(16) = [1 + (14)] ^ (11) x [1 + (15)] ^ (13)

North Carolina
Mobile Homeowners
MH(F)

Determination of Statewide Average Rating Factors and Premium Trends

	(1)	(2)	(3)		(4)	(5)	(6)
			= (1) / (2)				= (4) / (5)
		Owners				**Tenants**	
Accident Year	Earned Premium at Current Manual Level	Earned Premium at Current Base Class	Average Rating Factor		Earned Premium at Current Manual Level	Earned Premium at Current Base Class	Average Rating Factor
2018	$51,754,490	$33,140,835	1.562		$112,318	$42,694	2.631
2019	53,040,480	33,008,205	1.607		113,381	43,176	2.626
2020	51,685,788	31,140,830	1.660		118,169	45,147	2.617
2021	51,198,608	29,879,705	1.713		122,884	45,513	2.700
2022	56,651,185	31,140,686	1.819		130,709	47,686	2.741

	Annual Exponential Trend			Annual Exponential Trend
5 Years:	3.8%		5 Years:	1.1%
4 Years:	4.1%		4 Years:	1.6%
3 Years:	4.7%		3 Years:	2.3%

	Selected Premium Trends			Selected Premium Trends
Experience Period:	3.8%		Experience Period:	1.1%
Projection Period:	4.7%		Projection Period:	2.3%

(1) and (4) Calculated based on data provided by member companies and the extension of exposures method.
   See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.
(2) and (5) Calculated based on data provided by member companies and the extension of exposures method.
   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.

North Carolina
Mobile Homeowners
MH(F)

Determination of Average Rating Factors and Average Current Base Rates by Territory Group

	(1)	(2)	(3)	(4) = (1) / (2)	(5) = (2) / (3)		(6)	(7)	(8)	(9) = (6) / (7)	(10) = (7) / (8)
			Owners						**Tenants**		
Territory Group	2022 Earned Premium at Current Manual Level	2022 Earned Premium at Current Base	2022 Earned House Years	Average Rating Factor	Average Current Base Rate		2022 Earned Premium at Current Manual Level	2022 Earned Premium at Current Base	2022 Earned House Years	Average Rating Factor	Average Current Base Rate
1	$6,246,669	$3,401,051	3,306	1.837	$1,028.75		$2,488	$1,316	13	1.891	$104.42
2	2,344,183	1,575,602	1,902	1.488	828.20		2,520	1,245	13	2.024	99.56
3	14,388,809	8,367,591	12,149	1.720	688.76		21,337	8,008	99	2.664	80.73
4	7,077,179	3,699,087	6,267	1.913	590.27		22,745	7,911	112	2.875	70.88
5	6,746,357	3,632,301	6,975	1.857	520.80		13,854	4,771	76	2.904	62.76
6	19,847,988	10,465,054	26,988	1.897	387.76		67,765	24,435	404	2.773	60.42
Total	$56,651,185	$31,140,686	57,587	1.819	$540.76		$130,709	$47,686	716	2.741	$66.57

(1) and (6) Calculated based on data provided by member companies and the extension of exposures method; excludes exposures where amount of insurance is unavailable
See Section E, Page 10 for more details as well as an example related to the calculation of premium at present (manual) rates.

(2) and (7) Calculated based on data provided by member companies and the extension of exposures method.
See Explanatory Memorandum (Average Rating Factors) for definitions of the base class.

(3) and (8) Based on data provided by member companies

North Carolina
Mobile Homeowners
MH(F)

Derivation of Complement of Credibility

	Owners	Tenants
(1) Credibility-Wtd Non-Hurricane Base-Class Loss Cost from Prior Filing	$241.69	$53.07
(2) Premium Trend Rate	4.7%	2.3%
(3) Premium Trend Factor	1.059	1.029
(4) Loss Trend Rate	5.0%	5.0%
(5) Loss Trend Factor	1.063	1.063
(6) Complement of Credibility	$242.56	$54.82

(1) From 2022 NCRB Mobile Homeowners MH(F) rate filing, Section C, Pages 2 and 4

(2) From Section C, Page 40

(3) = [1 + (2)] ^ [15 / 12]; Trended 15 months from the trend-to date from the 2022 NCRB Mobile Homeowners MH(F) rate filing, Section C, Page 39 (1/1/2024) to
  the average written data for the period in which the rates are to be in effect (4/1/2025)

(4) From Section C, Pages 35 and 36

(5) = [1 + (4)] ^ [15 / 12]; Trended 15 months from the trend-to date from the 2022 NCRB Mobile Homeowners MH(F) rate filing, Section C, Page 34 (7/1/2024) to
  the average accident date for the period in which the proposed rates are to be in effect (10/1/2025)

(6) = (1) x (5) / (3)

North Carolina
Mobile Homeowners
MH(F)

Derivation of Modeled Hurricane Base Class Loss Cost

		Owners	Tenants
(1)	Trended Modeled Hurricane Loss & LAE	$15,416,593	$8,304
(2)	2022 Earned House Years	57,607	716
(3)	2022 Average Rating Factor	1.819	2.741
(4)	2022 Premium Trend Factor	1.151	1.064
(5)	Modeled Hurricane Base Class Loss Cost; = (1) / [(2) x (3) x (4)]	$127.81	$3.97

(1) Provided by Aon
(2) Based on data provided by member companies; excludes exposures where amount of insurance is unavailable
(3) From Section C, Page 40
(4) From Section C, Page 39

North Carolina
Mobile Homeowners
MH(F)

Determination of Expense Trend

Quarter Ending	(1) Quarterly Avg CPI: All Items	(2) Quarterly Avg CPI: All Items Less Energy	(3) Quarterly Compensation Cost Index (CCI)
9/30/2018	106.4	106.0	108.8
12/31/2018	106.3	106.4	108.7
3/31/2019	106.7	107.2	110.4
6/30/2019	108.0	107.8	111.4
9/30/2019	108.3	108.3	111.8
12/31/2019	108.5	108.7	111.8
3/31/2020	109.0	109.5	112.6
6/30/2020	108.4	109.6	114.1
9/30/2020	109.6	110.5	114.3
12/31/2020	109.9	110.9	114.5
3/31/2021	111.0	111.5	115.8
6/30/2021	113.6	113.5	116.6
9/30/2021	115.4	115.0	117.2
12/31/2021	117.2	116.5	117.8
3/31/2022	119.9	118.7	120.2
6/30/2022	123.4	121.0	122.8
9/30/2022	125.1	123.1	123.6
12/31/2022	125.5	124.3	124.2
3/31/2023	126.8	126.0	126.4
6/30/2023	128.3	127.6	128.1
9/30/2023	129.5	128.5	128.6

	Fitted Annual Trends (Exponential)			(4) Blended CPI and CCI Trends
21-point (2018-2023):	4.4%	4.1%	3.4%	3.9%
17-point (2019-2023):	5.3%	4.8%	3.8%	4.4%
13-point (2020-2023):	6.4%	5.7%	4.4%	5.2%
9-point (2021-2023):	5.9%	5.9%	5.0%	5.5%

Selected Experience Period Expense Trend: **5.0%**

Selected Projection Period Expense Trend: **5.0%**

(1), (2) From Bureau of Labor Statistics - Consumer Price Index for All Urban Consumers - U.S. City Average; each expenditure indexed to 2015 (i.e., 2015 index = 100)

(3) From Bureau of Labor Statistics - Employment Cost Index for Insurance Carriers and Related Activities

(4) = (1) x 25% + (2) x 25% + (3) x 50%

North Carolina
Mobile Homeowners
MH(F)

Derivation of Fixed Expense Per Policy

		Owners	Tenants
(1)	Experience Period Expense Trend	5.0%	5.0%
(2)	Projection Period Expense Trend	5.0%	5.0%
(3)	(a) Average Date of Expenses	7/1/2021	7/1/2021
	(b) End Date of Experience Period	12/31/2022	12/31/2022
	(c) Experience Period (Years) = (3b) - (3a)	1.500	1.500
(4)	(a) Trend-to Date	4/1/2025	4/1/2025
	(b) Projection Period (Years) = (4a) - (3b)	2.250	2.250
(5)	Expense Trend Factor	1.201	1.201
(6)	Fixed Expenses	11.1%	11.1%
(7)	2021 Premium Trend Factor	1.195	1.076
(8)	Trended Fixed Expenses	11.2%	12.4%
(9)	2022 Manual-Level Base Premium	$31,140,686	$47,686
(10)	2022 Earned Exposures	57,587	716
(11)	Average Current Base Premium	$540.76	$66.57
(12)	Fixed Expense Per Policy	$60.33	$8.25

(1), (2) From Section C, Page 44

(3a), (3b) Based on experience period used to select expenses

(4a) Based on a proposed policy period effective date of 10/1/2024

(5) = [1 + (1)] ^ (3c) x [1 + (2)] ^ (4b)

(6) From Section C, Page 46

(7) From Section C, Page 39

(8) = (5) x (6) / (7)

(9) Calculated based on data provided by member companies and the extension of exposures method

   See Section E, Page 9 for more details on the rate order calculation

   See Explanatory Memorandum (Average Rating Factors) for definitions of the base class

(10) Based on data provided by member companies; excludes exposure where amount of insurance is unavailable

(11) = (9) / (10)

(12) = (8) x (11)

North Carolina
Mobile Homeowners
MH(F)

Derivation of Underwriting Expense Ratios
Data Restated to Reflect Member Companies Currently Writing Policies in this Mobile Home Program

	2018		2019		2020		2021		2022		Average:	Selected
	$	%	$	%	$	%	$	%	$	%	2020-2022	
(1) Direct Premiums Written	$40,539,647	xxx	$40,586,421	xxx	$39,694,743	xxx	$43,637,165	xxx	$47,439,225	xxx		
(2) Direct Premiums Earned	38,830,027	xxx	41,028,442	xxx	39,500,944	xxx	41,627,439	xxx	45,346,824	xxx		
(3) Commission & Brokerage	$6,553,898	16.2%	$6,953,265	17.1%	$7,181,825	18.1%	$7,884,874	18.1%	$8,156,697	17.2%	17.8%	**17.8%**
(4) Taxes, Licenses, & Fees	1,256,957	3.1%	1,152,428	2.8%	1,215,445	3.1%	1,231,162	2.8%	1,393,246	2.9%	2.9%	**2.9%**
(5) Other Acquisition	2,682,352	6.9%	2,795,936	6.8%	2,880,135	7.3%	3,121,316	7.5%	3,442,507	7.6%	7.5%	**7.5%**
(6) General Expenses	1,397,590	3.6%	1,435,228	3.5%	1,296,868	3.3%	1,410,449	3.4%	1,882,473	4.2%	3.6%	**3.6%**
(7) Total		29.8%		30.3%		31.7%		31.8%		31.9%	31.8%	31.8%
(8) Variable Expenses		19.3%		20.0%		21.2%		20.9%		20.1%	20.7%	20.7%
(9) Fixed Expenses		10.5%		10.3%		10.6%		10.9%		11.7%	11.1%	11.1%

(1) through (6) Provided by the North Carolina Rate Bureau
(3) & (4) Relative to written premium
(5) & (6) Relative to earned premium
(7) = (3) + (4) + (5) + (6)
(8) = (3) + (4)
(9) = (5) + (6)

North Carolina
Mobile Homeowners
MH(F)

Derivation of Ratio of Unallocated Loss Adjustment Expense (ULAE) to Loss & Allocated Loss Adjustment Expense (ALAE)
Data Restated to Reflect Member Companies Currently Writing Policies in this Mobile Home Program

	(1)	(2)	(3)	(4)
			= (1) / (2)	
				Distribution of
			Ratio of Incurred	Incurred Hurricane
Calendar		Incurred	ULAE to Incurred	Loss & ALAE
Year	Incurred ULAE	Loss & ALAE	Loss & ALAE	as % of Total
2018	$10,274,450	$55,508,003	18.5%	70.9%
2019	1,965,384	11,280,905	17.4%	6.7%
2020	3,641,743	19,602,001	18.6%	12.2%
2021	1,610,828	12,598,511	12.8%	3.6%
2022	2,238,182	19,396,771	11.5%	7.1%
Total	$19,730,587	$118,386,191	16.7%	
Average (2018-2022):			15.8%	
Average (excluding 2018):			15.1%	

Selected Ratio of ULAE to Loss & ALAE (Non-Hurricane):   **15.1%**

Selected Ratio of LAE to Loss (Hurricane):   **6.0%**

(1) = Adjusting & Other Expenses

(2) = Incurred Loss + Defense & Cost Containment Expenses

(1), (2) Provided by the North Carolina Rate Bureau

(4) Based on data provided by member companies

Note: See pre-filed testimony of M. Mao for support of the Catastrophe LAE Ratio, which is applied by Aon to the modeled hurricane wind and storm
surge losses

North Carolina
Mobile Homeowners
MH(F)

Derivation of Policyholder Dividends

	(1)	(2)	(3)
			= (2) / (1)
Calendar Year	Total Written Premium: Homeowners ($000)	Dividends ($000)	Dividends as Percent of Total Written Premium
2018	$2,710,120	$11,678	0.4%
2019	2,887,386	17,986	0.6%
2020	3,105,409	15,534	0.5%
2021	3,322,162	14,368	0.4%
2022	3,732,563	14,448	0.4%
Total	$15,757,640	$74,015	0.5%

Average (2018-2022):	0.5%
Average (2018-2022 excluding High & Low):	0.5%
Selected Policyholder Dividends:	**0.5%**

(1), (2) From industry Annual Statements, Statutory Page 14, Homeowners Multiple Peril

**North Carolina
Mobile Homeowners
MH(F)**

Derivation of Compensation for Assessment Risk per Policy

	Owners	Tenants
(1) Average Current Base Premium	$540.76	$66.57
(2) Compensation for Assessment Risk	1.4%	1.4%
(3) Commission & Brokerage	17.8%	17.8%
(4) Taxes, Licenses, & Fees	2.9%	2.9%
(5) Compensation for Assessment Risk (Adj for Expenses)	1.8%	1.8%
(6) Compensation for Assessment Risk per Policy	$9.55	$1.18

(1) From Section C, Page 45
(2) See pre-filed testimony from M. Mao for support of Compensation for Assessment Risk provision
(3), (4) From Section C, Page 46
(5) = (2) / [1 - (3) - (4)]
(6) = (1) x (5)

North Carolina
Mobile Homeowners
MH(F) - Owners

Derivation of Base Class Net Cost of Reinsurance by Territory Group

	(1)	(2)	(3) = (1) / (2)	(4)	(5)	(6)	(7) = (3) / {(4) x (5) x [1-(6)]}
Territory Group	Estimated Net Cost of Reinsurance	2022 House Years	Average Net Cost of Reinsurance	2022 Average Rating Factor	2022 Premium Trend Factor	Variable Expenses	Base Class Net Cost of Reinsurance
1	$8,084,835	3,306	$2,445.20	1.837	1.151	0.287	$1,622.23
2	2,341,825	1,902	1,230.96	1.488	1.151	0.287	1,008.17
3	12,030,303	12,154	989.82	1.720	1.151	0.287	701.40
4	4,387,368	6,271	699.58	1.913	1.151	0.287	445.56
5	3,320,952	6,976	476.02	1.857	1.151	0.287	312.30
6	4,206,115	26,997	155.80	1.897	1.151	0.287	100.10
Statewide	$34,371,398	57,607	$596.65	1.819	1.151	0.287	$399.64

(1) Provided by Aon

(2) Based on data provided by member companies; excludes exposures where amount of insurance is unavailable

(4) From Section C, Page 41

(5) From Section C, Page 39

(6) From Section C, Page 1. Includes Commission and Brokerage expense; Taxes, Licenses, and Fees; Profit; Contingencies; and Policyholder Dividends

North Carolina
Mobile Homeowners
MH(F) - Tenants

Derivation of Base Class Net Cost of Reinsurance by Territory Group

	(1)	(2)	(3) = (1) / (2)	(4)	(5)	(6)	(7) = (3) / {(4) x (5) x [1-(6)]}
Territory Group	Estimated Net Cost of Reinsurance	2022 House Years	Average Net Cost of Reinsurance	2022 Average Rating Factor	2022 Premium Trend Factor	Variable Expenses	Base Class Net Cost of Reinsurance
1	$2,345	13	$186.08	1.891	1.064	0.287	$129.73
2	1,800	13	143.94	2.024	1.064	0.287	93.73
3	7,450	99	75.11	2.664	1.064	0.287	37.16
4	5,024	112	45.01	2.875	1.064	0.287	20.64
5	2,030	76	26.70	2.904	1.064	0.287	12.12
6	3,078	404	7.61	2.773	1.064	0.287	3.62
Statewide	$21,727	716	$30.33	2.741	1.064	0.287	$14.59

(1) Provided by Aon
(2) Based on data provided by member companies; excludes exposures where amount of insurance is unavailable
(4) From Section C, Page 41
(5) From Section C, Page 39
(6) From Section C, Page 1. Includes Commission and Brokerage expense; Taxes, Licenses, and Fees; Profit; Contingencies; and Policyholder Dividends

North Carolina
Mobile Homeowners
MH(F)

Derivation of Net Deviations

	(1)	(2)	(3) = (1) + (2)	(4)	(5)	(6) = (4) + (5)	(7) = (4) / (6)	(8) = 1 - (1) / (4)	(9) = 1- (2) / (5)	(10) = 1 - (3) / (6)
Calendar	Direct Written Premium (Including Net Deviations)			Manual Premium (Excluding Net Deviations)				Deviation from Manual Premium		
Year	Standard	Non-Standard	Total	Standard	Non-Standard	Total	% Standard	Standard	Non-Standard	Total
2018	$50,164,992	$611,317	$50,776,309	$56,888,284	$490,624	$57,378,908	99.1%	11.8%	-24.6%	11.5%
2019	49,387,254	658,055	50,045,309	57,801,357	529,835	58,331,192	99.1%	14.6%	-24.2%	14.2%
2020	48,225,425	677,108	48,902,533	60,496,636	545,615	61,042,251	99.1%	20.3%	-24.1%	19.9%
2021	49,844,496	694,091	50,538,587	61,164,495	561,562	61,726,057	99.1%	18.5%	-23.6%	18.1%
2022	46,841,205	683,105	47,524,310	68,937,465	563,153	69,500,618	99.2%	32.1%	-21.3%	31.6%
Total	$244,463,372	$3,323,676	$247,787,048	$305,288,237	$2,690,789	$307,979,026	99.1%	19.9%	-23.5%	19.5%

Average (2018-2022):	19.1%
Average (2018-2022 excluding High & Low):	17.4%
Average (2020-2022):	23.2%
Selected Net Deviations:	**5.0%**

(1), (2), (4), (5) Provided by the North Carolina Rate Bureau

North Carolina Mobile Homeowners
MH(F) Program

Section D

Exhibits Supporting the Rating Plan Revisions

North Carolina Mobile Homeowners
MH(F) Program

Exhibits Supporting the Rating Plan Revisions

Table of Contents

North Carolina
Mobile Homeowners
MH(F)

Derivation of Wind Exclusion Credits

	Territory Group 1		Territory Group 2	
	Owners	Tenants	Owners	Tenants
(1) Indicated Required Base Class Rate	$3,092.94	$324.35	$1,983.16	$228.36
(2) Loss Cost Underlying Indicated Rate Change	$865.65	$113.93	$540.28	$75.43
(3) Non-Wind Portion of Losses	25.82%	80.20%	31.58%	58.57%
(4) Fixed Expenses per Policy	$59.75	$11.96	$73.76	$11.17
(5) Variable Expense per Policy	28.70%	28.70%	28.70%	28.70%
(6) Non-Wind Base Rate excl. Reinsurance Cost; = [(2) x (3) + (4)] / [1.0 - (5)]	$397.31	$144.92	$342.72	$77.63
(7) Compensation for Assessment Risk per Policy	$18.16	$1.84	$14.62	$1.76
(8) Compensation for Assessment Risk Adjustment Factor	0.306	0.821	0.398	0.639
(9) Adjusted Compensation for Assessment Risk; = (7) x (8)	$5.56	$1.51	$5.82	$1.12
(10) Net Cost of Reinsurance (Non-Wind Perils Only)	$237.01	$35.21	$176.19	$59.67
(11) Net Deviations	5.0%	5.0%	5.0%	5.0%
(12) Indicated Wind Exclusion Credit	78.2%	41.0%	72.1%	36.2%
(13) Current Wind Exclusion Credit	74.1%	68.7%	70.4%	49.2%
(14) Proposed Wind Exclusion Credit	76.2%	54.9%	71.3%	42.7%

(1), (2), (4), (5), (7) From Section C, Pages 6 and 17

(3) = X / (X + Y + Z); where X = 5-year average annual non-wind losses + 2022 modeled storm surge losses, Y = 2022 modeled hurricane wind losses, and Z = 5-year average annual non-hurricane wind losses

(8) = [(2) x (3) + (4)] / [(2) + (4)]

(10) Based on data provided by Aon

(11) From Section C, Page 1

(12) = { (1) - [(6) + (9) + (10)] / [1 - (11)] } / (1)

(13) From NCRB MH(F) Rate Manual

(14) Based on average of (12) and (13)

North Carolina Mobile Homeowners
MH(F) Program

Section E

Supplemental Information

North Carolina Mobile Homeowners
MH(F) Program

Supplemental Information
Responses to North Carolina Administrative Code Title 11, Chapter 10.1105

Table of Contents

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1)
Summary of Earned Premium by Policy Form and Year

Earned Premium at Actual (i.e. Collected) Level

	(1)	(2)	(3) = (1) + (2)
Calendar / Accident Year	Owners	Tenants	**Total**
2018	$47,758,852	$103,281	**$47,862,133**
2019	48,911,231	102,365	**49,013,596**
2020	46,604,895	111,314	**46,716,210**
2021	46,353,474	97,008	**46,450,482**
2022	43,352,097	54,743	**43,406,841**
Total	$232,980,549	$468,712	**$233,449,261**

Earned Premium at Current (i.e. Manual) Rate Level

	(4)	(5)	(6) = (4) + (5)
Calendar / Accident Year	Owners	Tenants	**Total**
2018	$51,754,490	$112,318	**$51,866,808**
2019	53,040,480	113,381	**53,153,861**
2020	51,685,788	118,169	**51,803,957**
2021	51,198,608	122,884	**51,321,492**
2022	56,651,185	130,709	**56,781,894**
Total	$264,330,551	$597,461	**$264,928,012**

Note: based on data provided by member companies; earned premiums at current (manual)
rate level are calculated using the extension of exposures method

Earned Premium at Current (i.e. Manual) Rate Level shown is based on only those policies that contained all
the risk characteristics required to calculate a mobile homeowners premium. For more details on data excluded
from parts of the rate review analysis, please see Section E, Page 5

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1)
Summary of Paid Losses and Allocated Loss Adjustment Expenses (ALAE) by Policy Form and Year

Paid Losses

	(1)	(2)	(3) = (1) + (2)
Calendar / Accident Year	Owners	Tenants	Total
2018	$67,922,778	$59,946	$67,982,725
2019	17,167,650	1,648	17,169,298
2020	22,726,864	8,374	22,735,238
2021	15,732,199	34,210	15,766,409
2022	17,871,000	18,278	17,889,278
Total	$141,420,492	$122,455	$141,542,947

Paid ALAE

	(4)	(5)	(6) = (4) + (5)
Calendar / Accident Year	Owners	Tenants	Total
2018	$2,500,642	$4,457	$2,505,099
2019	887,546	0	887,546
2020	1,147,255	0	1,147,255
2021	688,526	450	688,976
2022	585,333	0	585,333
Total	$5,809,301	$4,907	$5,814,209

Notes:

Losses and ALAE based on data provided by member companies and include actual hurricane losses.

All amounts shown exclude Unallocated Loss Adjustment Expenses (ULAE).
ULAE was accounted for in the rate indication via a 15.1% ULAE factor applied to Non-Hurricane
losses and a 6.0% LAE factor applied to Hurricane Losses (see Section C, Page 47).
For Non-Hurricane losses, the ULAE factors are applied on Section C, Pages 3 and 5.
For Hurricane losses, the LAE factor is applied by Aon.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1)
Summary of Incurred Losses and Allocated Loss Adjustment Expenses (ALAE) by Policy Form and Year

Incurred Losses

	(1)	(2)	(3)
			= (1) + (2)
Calendar / Accident Year	Owners	Tenants	Total
2018	$67,922,778	$59,946	$67,982,725
2019	17,177,650	1,648	17,179,298
2020	22,817,864	8,374	22,826,238
2021	15,803,274	34,210	15,837,484
2022	18,707,846	18,278	18,726,124
Total	$142,429,413	$122,455	$142,551,868

Incurred ALAE

	(4)	(5)	(6)
			= (4) + (5)
Calendar / Accident Year	Owners	Tenants	Total
2018	$2,500,642	$4,457	$2,505,099
2019	887,546	0	887,546
2020	1,186,755	0	1,186,755
2021	688,526	450	688,976
2022	595,524	0	595,524
Total	$5,858,992	$4,907	$5,863,900

Notes:
Losses and ALAE based on data provided by member companies and include actual hurricane losses.

All amounts shown exclude Unallocated Loss Adjustment Expenses (ULAE).
ULAE was accounted for in the rate indication via a 15.1% ULAE factor applied to Non-Hurricane
losses and a 6.0% LAE factor applied to Hurricane Losses (see Section C, Page 47).
For Non-Hurricane losses, the ULAE factors are applied on Section C, Pages 3 and 5.
For Hurricane losses, the LAE factor is applied by Aon.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1)
Summary of Incurred Losses by Policy Form and Year

Anticipated Loss Ratio

The following were the anticipated loss and LAE ratios in the prior filings:

	Anticipated Loss Ratio				
Policy Form	Eff. 10/1/2023	Eff. 5/1/2022	Eff. 6/1/2020	Eff. 10/1/2015	Eff. Prior to 10/1/2015
Owners	12.2%	15.2%	16.7%	38.2%	48.7%
Tenants	45.6%	45.3%	45.6%	36.2%	48.7%

Note:
See explanatory filing memorandum and Section C in Exhibit RB-1 for additional information about expenses.

North Carolina
Mobile Homeowners
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North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1a)
Summary of Exposure Data by Policy Form and Year

Earned House Years

Calendar / Accident Year	(1) Owners	(2) Tenants	(3) = (1) + (2) Total
2018	69,528	632	**70,160**
2019	68,559	641	**69,199**
2020	63,944	672	**64,617**
2021	61,497	682	**62,179**
2022	60,737	716	**61,454**
Total	324,265	3,343	**327,608**

Excluded Companies:

-- American Modern Insurance Group (0.2% market share in 2022) was unable to provide amount of coverage data. As such, American Modern Insurance Group's exposure and premium data were excluded from the analysis when calculating the average rating factors, exposure trend, premium trend, modeled hurricane loss cost, net cost of reinsurance, and fixed expense per policy.

-- No companies were excluded from the loss data used to develop the loss development and loss trend calculations.

-- No companies were excluded from the underwriting expense, loss adjustment expense, and deviation data used to develop the rate level calculations.

**North Carolina
Mobile Homeowners
MH(F)**

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1b)

Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1c)
Summary of Data Adjustments

(1) Hurricane Losses

Actual hurricane losses were removed from the experience period data and replaced with modeled (i.e. expected) hurricane losses developed by Aon. Additionally, because storm surge is included in the modeled losses, flood losses in territories 110, 120, 130, 140, 150, and 160 associated with hurricanes were also removed. The tables below show, by accident year for each policy form, the proportion of the total losses and claim counts removed from the analysis due to hurricanes and storm surge:

Owners:

	Proportion of Loss & ALAE Due to Hurricanes					Proportion of Claims Due to Hurricanes				
	Accident Year					Accident Year				
Territory	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
110	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
120	94.6%	17.0%	34.6%	0.0%	10.2%	86.3%	23.3%	40.8%	0.0%	13.1%
130	72.9%	92.5%	9.1%	0.0%	0.0%	70.5%	73.6%	17.9%	0.0%	0.0%
140	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
150	85.4%	32.0%	20.9%	1.5%	4.1%	66.9%	34.9%	20.8%	1.0%	6.5%
160	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
170	7.2%	0.0%	36.5%	0.0%	0.0%	7.8%	0.8%	20.8%	0.0%	0.0%
180	59.6%	16.7%	37.9%	1.9%	5.9%	54.2%	22.3%	22.4%	0.8%	5.4%
190	88.7%	24.6%	16.1%	4.8%	1.3%	75.3%	29.4%	19.5%	1.1%	1.1%
200	84.2%	26.4%	22.1%	0.0%	26.0%	83.8%	19.7%	6.1%	0.0%	27.5%
210	40.1%	5.4%	6.6%	0.3%	1.5%	32.8%	7.6%	9.4%	1.1%	3.1%
220	83.4%	13.2%	2.8%	0.3%	25.8%	77.9%	14.4%	5.1%	1.3%	11.0%
230	84.8%	9.7%	1.8%	7.0%	22.2%	81.4%	10.3%	1.9%	1.2%	22.3%
240	46.6%	2.0%	10.8%	3.9%	4.1%	37.6%	3.2%	8.4%	1.5%	5.4%
250	69.9%	0.4%	4.1%	0.0%	9.3%	69.9%	5.3%	3.7%	0.0%	11.0%
260	27.6%	0.5%	7.5%	3.2%	1.7%	20.1%	0.5%	7.7%	2.2%	5.0%
270	25.0%	0.8%	3.3%	1.5%	11.9%	27.9%	2.4%	2.4%	0.9%	11.1%
280	26.5%	4.1%	5.0%	0.0%	4.6%	29.4%	3.5%	5.2%	0.0%	9.4%
290	67.2%	5.8%	2.2%	1.0%	6.5%	55.8%	5.0%	2.2%	1.0%	12.7%
300	71.9%	0.0%	5.1%	0.3%	13.3%	61.7%	0.0%	4.1%	1.4%	11.9%
310	17.5%	1.4%	11.6%	1.4%	6.0%	23.0%	0.7%	11.7%	1.1%	7.2%
320	38.1%	0.6%	6.2%	1.9%	5.3%	29.6%	0.3%	6.7%	1.3%	7.7%
330	3.2%	0.0%	13.1%	0.0%	1.5%	6.4%	0.0%	15.1%	0.0%	3.7%
340	26.7%	0.0%	7.1%	3.2%	7.1%	24.0%	0.4%	8.1%	1.8%	5.2%
350	14.7%	0.8%	7.0%	3.6%	0.4%	11.9%	0.4%	7.8%	2.1%	0.8%
360	7.3%	0.1%	10.8%	3.8%	0.2%	7.9%	0.2%	8.9%	2.4%	0.8%
370	3.1%	0.0%	0.5%	0.0%	0.0%	4.0%	0.0%	4.3%	0.0%	0.0%
380	6.9%	0.0%	2.1%	41.0%	0.0%	1.9%	0.0%	3.3%	4.8%	0.0%
390	0.5%	1.2%	2.4%	0.0%	0.0%	5.3%	1.6%	1.2%	0.0%	0.0%

**North Carolina
Mobile Homeowners
MH(F)**

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1c)
Summary of Data Adjustments

(1) Hurricane Losses

Actual hurricane losses were removed from the experience period data and replaced with modeled (i.e. expected) hurricane losses developed by Aon. Additionally, because storm surge is included in the modeled losses, flood losses in territories 110, 120, 130, 140, 150, and 160 associated with hurricanes were also removed. The tables below show, by accident year for each policy form, the proportion of the total losses and claim counts removed from the analysis due to hurricanes and storm surge:

Tenants:

	Proportion of Loss & ALAE Due to Hurricanes					Proportion of Claims Due to Hurricanes				
	Accident Year					Accident Year				
Territory	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
110	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
120	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
130	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
140	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
150	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
160	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
170	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
180	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%
190	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
200	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
210	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
220	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
230	16.1%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%
240	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
250	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
260	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
270	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
280	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
290	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
300	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
310	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
320	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
330	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
340	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
350	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
360	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
370	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
380	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
390	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1c)
Summary of Data Adjustments

(2) Catastrophe Losses

Losses and claim counts used in the loss trend analysis were adjusted to remove catastrophe losses. This was done to prevent the volatile nature of catastrophe losses from impacting historical and projected trend selections. Because catastrophe losses other than hurricane and flood were not explicitly identified in the data provided by member companies, weekly claim data was reviewed by peril (water and wind) in order to identify catastrophe events. For each peril, weeks during the experience period which had reported claim counts that were greater than two times the standard deviation of weekly reported claims were identified as having catastrophe events. The claims and losses for each peril that occurred during those weeks were excluded from the loss trend analysis. The tables below show, by accident year for each policy form, the proportion of the total losses and claim counts removed from the analysis due to catastrophes:

Accident Year	Proportion of Losses Due to Catastrophes			Accident Year	Proportion of Claims Due to Catastrophes	
	Owners	Tenants			Owners	Tenants
2018	77.5%	84.1%		2018	66.0%	63.6%
2019	24.0%	0.0%		2019	19.5%	0.0%
2020	32.3%	49.6%		2020	30.9%	50.0%
2021	4.3%	95.2%		2021	2.0%	25.0%
2022	17.8%	0.0%		2022	18.0%	0.0%

(3) Excess Wind Losses

Non-hurricane wind losses have been smoothed using an excess wind procedure. See the prefiled testimony of P. Anderson.

(4) Excess Flood Losses

Non-hurricane flood losses have been smoothed using an excess flood procedure. See the prefiled testimony of P. Anderson.

(5) Allocation of Data to Territory Groups

Because data provided by member companies only included zip code, the exposure, premium, and loss data needed to be allocated to the current territory definitions in instances where zip codes are located in multiple territories and the rated territory is unavailable from the member company. The allocation in these instances was determined based on the number of mobile homes in each county/zip code/census block combination, as determined from census data. In the affected zip codes, each county/zip code/census block combination was mapped to a territory. Then, for each territory, the proportion of mobile homes within the territory out of the total mobile homes within the zip code was determined. These proportions within each territory were then used to allocate the exposure, premium, and loss data.

(6) Loss Development

Losses were developed to ultimate using loss development factors. See the prefiled testimony of P. Anderson.

(7) Loss Trend

Losses were trended to the average accident date of the policy period in which the rates are proposed to be in effect in order to bring all historical losses to a common projected cost level. See the prefiled testimony of P. Anderson.

(8) Expenses

The historical expense data was restated to reflect the member companies currently writing policies in this Mobile Homeowners program. The need for the restatement is due to one member company transferring its MH(F) policies to the MH(C) policy form during 2022.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1d)
Calculation of Premium at Current Rate Level

-- See Section E, Page 1, which provides the actual earned premiums and earned premiums at present rates.

-- Earned premium at present rates were calculated based on the following rate order calculation formula:

Earned Premium = Base Rate for Given Amount of Insurance x Territory Factor x (1 - Tie-Down Credit) x Deductible Factor x Earned Exposure

-- The following demonstrates a sample calculation for the earned premium at present rates for a single insured with an Owners policy having $30,000 of Coverage A and a $500 deductible, where the mobile home is located in territory group 1 and qualifies for the tie-down credit:

(1)	Base Rate for $30,000 of coverage	$990.00
(2)	Territory Group 1 Surcharge	1.481
(3)	Tie-Down Credit	10%
(4)	Deductible Credit for $500 deductible (%)	27%
(5)	Deductible Credit for $500 deductible ($)	$241.01
(6)	Earned Exposure	1.000
(7)	Premium at Present (Manual) Rates	$1,078.56

Notes:
(1) Assumes Policy Form MH(F)-3
(5) = Min { [(1) x (2) x {1 - (3)}] x (4) , $241.01 }, where $241.01 is the maximum deductible credit for territory group 1
(7) = [(1) x (2) x {1 - (3)} - (5)] x (6)

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1e)
Premium Data for Largest Writers of Mobile Home Insurance in North Carolina

	Company	2022 Written Premium	2022 Written Premium Market Share	2022 Earned Premium	2022 Earned Premium Market Share
1	American Bankers Insurance Company of Florida	$19,694,263	41.4%	$18,846,845	41.5%
2	State Farm Fire & Casualty Company	14,774,854	31.1%	14,105,866	31.1%
3	North Carolina Farm Bureau Mutual Insurance Company	5,605,272	11.8%	5,441,297	12.0%
4	Erie Insurance Company	4,238,974	8.9%	3,856,231	8.5%
5	Windsor Mount Joy Mutual Insurance Company	3,125,862	6.6%	3,096,585	6.8%
6	American Modern Property and Casualty Insurance Company	86,583	0.2%	54,142	0.1%
7	American Modern Home Insurance Company	-1,498	0.0%	20,473	0.0%
	Total	$47,524,310	100.0%	$45,421,439	100.0%

Note:
Fewer than ten companies are listed above because only companies with 2022 earned premium greater than $0 are included.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1f)

Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1g)

Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1h)

Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1i)
Experience Period Loss Data by Policy Form and Year

Owners

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9) = (5) x (6) x (7) x (8)	(10)
Accident Year	Paid Claims	Outstanding Claims	Paid Loss & ALAE	Case Outstanding Loss & ALAE	Incurred Loss & ALAE	Loss & ALAE Development Factor	ULAE Factor	Loss Trend Factor	Trended Incurred Loss & LAE	Expected Loss Ratio
2018	14,591	0	$70,423,420	$0	$70,423,420	1.000	1.151	1.357	$110,016,226	12.2%
2019	4,957	1	18,055,196	10,000	18,065,196	1.000	1.151	1.307	27,167,543	12.2%
2020	6,345	5	23,874,119	130,500	24,004,619	0.998	1.151	1.258	34,681,758	12.2%
2021	3,780	9	16,420,725	71,075	16,491,800	0.998	1.151	1.211	22,937,306	12.2%
2022	4,566	87	18,456,333	847,037	19,303,370	1.009	1.151	1.166	26,129,235	12.2%
Total	34,239	102	$147,229,793	$1,058,612	$148,288,405				$220,932,069	12.2%

Tenants

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19) = (15) x (16) x (17) x (18)	(20)
Accident Year	Paid Claims	Outstanding Claims	Paid Loss & ALAE	Case Outstanding Loss & ALAE	Incurred Loss & ALAE	Loss & ALAE Development Factor	ULAE Factor	Loss Trend Factor	Trended Incurred Loss & LAE	Expected Loss Ratio
2018	11	0	$64,404	$0	$64,404	1.000	1.151	1.125	$83,408	45.6%
2019	2	0	1,648	0	1,648	1.000	1.151	1.129	2,142	45.6%
2020	6	0	8,374	0	8,374	0.998	1.151	1.133	10,901	45.6%
2021	4	0	34,660	0	34,660	0.998	1.151	1.137	45,285	45.6%
2022	9	0	18,278	0	18,278	1.009	1.151	1.142	24,230	45.6%
Total	32	0	$127,363	$0	$127,363				$165,967	45.6%

Note: Loss & ALAE and claims based on data provided by member companies; losses include actual hurricane losses

(6), (16) from Section C, Page 32
(7), (17) from Section C, Page 47
(8), (18) from Section C, Page 34
(10), (20) from Section E, Page 4

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1j)

Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
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North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1k)

See explanatory filing memorandum in Exhibit RB-1 and prefiled testimony of P. Anderson and M. Mao.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (1l)
Summary of Loss & ALAE Data by Cause of Loss

Owners

Incurred Loss & ALAE by Peril

Accident Year	Fire, Lightning & Removal	Liability	Theft	Non-Flood Water	Flood	Non-Hurricane Wind & Hail	Hurricane	Vandalism	All Other	Total
2018	$4,873,551	$161,249	$700,932	$5,535,796	$1,231,622	$6,200,851	$49,958,264	$175,271	$1,585,884	$70,423,420
2019	4,829,124	187,238	559,490	3,831,516	68,797	6,460,378	1,212,106	105,396	811,151	18,065,196
2020	4,775,368	435,006	295,118	4,455,155	215,954	9,954,503	2,923,674	48,225	901,616	24,004,619
2021	5,112,920	369,690	271,120	4,465,367	121,861	4,626,290	589,118	275,975	659,459	16,491,800
2022	3,937,828	415,265	276,426	4,227,264	0	8,149,834	1,371,909	328,941	595,904	19,303,370
Total	$23,528,791	$1,568,447	$2,103,087	$22,515,098	$1,638,234	$35,391,857	$56,055,070	$933,808	$4,554,013	$148,288,405

Tenants

Incurred Loss & ALAE by Peril

Accident Year	Fire, Lightning & Removal	Liability	Theft	Non-Flood Water	Flood	Non-Hurricane Wind & Hail	Hurricane	Vandalism	All Other	Total
2018	$33,616	$0	$2,875	$786	$0	$4,396	$22,731	$0	$0	$64,404
2019	0	0	0	0	0	714	0	0	934	1,648
2020	0	0	1,905	2,319	0	0	4,150	0	0	8,374
2021	0	0	0	0	33,000	0	0	0	1,660	34,660
2022	15,000	2,650	300	0	0	0	0	0	328	18,278
Total	$48,616	$2,650	$5,080	$3,105	$33,000	$5,109	$26,881	$0	$2,922	$127,363

Note: based on data provided by member companies

North Carolina
Mobile Homeowners
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North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (2)
Credibility Factor Development and Application

See explanatory filing memorandum in Exhibit RB-1 and prefiled testimony of P. Anderson.

**North Carolina
Mobile Homeowners
MH(F)**

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (3)

Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (4)
Loss Trend Factor Development and Application

(4a) See Section C, Pages 34 through 37 and prefiled testimony of P. Anderson.

(4b) Not applicable (no external indices used for loss trending purposes)

(4c) Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (5)
Changes in Premium Base resulting from Rating Exposure Trend

(5a) See Section C, Pages 38 through 40 and prefiled testimony of P. Anderson.

(5b) Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (6)
Limitations

(6a) No limitations were placed on the loss data provided by member companies included in the filing.

(6b) Limitations were applied to the rate changes by policy form. The filed overall rate level changes for Owners and Tenants are 24.9% and 24.8% in Year 1; 21.2% and 13.9% in Year 2; and 21.0% and 13.6% in Year 3, respectively.

There were no limitations on the extent of the rate level change by coverage, by coverage amount, by protection class, by construction, or by deductible.

(6c) Limitations were applied to the territorial rate changes as follows:

Territory Group	Proposed Rate Change - Year 1		
	Owners	Tenants	Total
1	49.0%	49.0%	49.0%
2	49.0%	49.0%	49.0%
3	35.0%	35.3%	35.0%
4	25.0%	26.0%	25.0%
5	19.0%	26.5%	19.0%
6	9.0%	19.0%	9.0%

Territory Group	Proposed Rate Change - Year 2		
	Owners	Tenants	Total
1	42.1%	44.6%	42.1%
2	26.8%	24.2%	26.8%
3	25.0%	16.3%	25.0%
4	23.0%	12.2%	23.0%
5	18.6%	12.5%	18.6%
6	8.0%	12.0%	8.0%

Territory Group	Proposed Rate Change - Year 3		
	Owners	Tenants	Total
1	42.1%	44.6%	42.1%
2	26.8%	24.2%	26.8%
3	24.5%	16.3%	24.5%
4	16.8%	12.2%	16.8%
5	18.6%	12.5%	18.6%
6	7.0%	10.9%	7.0%

Note:
Territory Group 1 (Territories 110, 120, 130, and 140)
Territory Group 2 (Territories 150 and 160)
Territory Group 3 (Territories 180, 190, 200, 210, 220, and 230)
Territory Group 4 (Territories 170, 240, and 250)
Territory Group 5 (Territories 260, 270, 280, 290, and 300)
Territory Group 6 (Territories 310, 320, 330, 340, 350, 360, 370, 380, and 390)

(6d) Other than the excluded data discussed on Section E, Page 5 and those mentioned above, there were no other limitations.

**North Carolina
Mobile Homeowners
MH(F)**

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (7)
Overhead and Underwriting Expenses

(7a) See Section C, Pages 44 through 46 and prefiled testimony of P. Anderson.

(7b) Not applicable to Mobile Homeowners rate filings.

(7c) Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (8)
Percent Rate Change

(8a) See Section A, Page 1

(8b) The proposed rate changes are based on the indicated rate changes, which reflect an assumed effective date of 10/1/2024 and
the assumption that the proposed rates will be in effect for one year. However, the Rate Bureau Governing Committee elected
to spread the proposed rate changes over three years, with a proposed effective date of 11/1/2024 for the year 1 change, an
effective date of 11/1/2025 for the year 2 change, and an effective date of 11/1/2026 for the year 3 change.

To the extent the actual implementation date is later than the assumed effective date for the year 1 change, the indicated and
proposed rate changes would be impacted, as the change in the proposed effective date would impact the loss and premium
trend periods used in the filing. Changes in trend periods would impact projected losses, premiums, and fixed expenses used
to calculate the rate level indications.

If the effective date were to change, advance notice of 105 days is required for an orderly implementation of the change in
rates.

(8c) Not applicable

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (9)
Final Proposed Rates

(9a) The proposed rates and rating factors can be found in Section B of Exhibit RB-1 accompanying this filing.

(9b) Not applicable

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (10)
Investment Earnings

(10a) See Investment Income calculations on Section E, Pages 28 and 29.

Note: The Investment Income calculations reflect data for the entire statutory line of business, Homeowners Multiple Peril, rather than only Mobile Homeowners policies since the investment income information is from Statutory Page 14 of the Annual Statement.

(10b) Not applicable to Mobile Homeowners rate filings.

(10c) Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (10a)
Investment Earnings

		Accident Year				
		2018	2019	2020	2021	2022
Direct Earned Premium						
(1)	Direct Earned Premium	$2,580,906,277	$2,748,738,904	$2,927,843,779	$3,117,849,262	$3,418,913,643
Unearned Premium Reserve (UPR)						
(2)	Prior Year UPR as of 12/31	$1,306,548,706	$1,386,288,967	$1,469,475,147	$1,585,491,577	$1,703,096,979
(3)	Current Year UPR as of 12/31	1,386,288,967	1,469,475,147	1,585,491,577	1,703,096,979	1,910,955,876
(4)	Average UPR; = [(2) + (3)] / 2	1,346,418,837	1,427,882,057	1,527,483,362	1,644,294,278	1,807,026,428
(5)	Total Prepaid Expenses; = (5a) + (5b) + (5c) + (5d)	24.5%	25.1%	26.5%	26.3%	26.0%
	(5a) Commission & Brokerage	16.2%	17.1%	18.1%	18.1%	17.2%
	(5b) Taxes, Licenses & Fees	3.1%	2.8%	3.1%	2.8%	2.9%
	(5c) General Expenses / 2	1.8%	1.7%	1.6%	1.7%	2.1%
	(5d) Other Acquisition / 2	3.5%	3.4%	3.7%	3.7%	3.8%
(6)	Deduction for Prepaid Expenses; = (4) x (5)	330,152,560	358,795,630	405,474,881	433,004,752	469,868,298
(7)	Net UPR Subject to Investment; = (4) - (6)	$1,016,266,276	$1,069,086,427	$1,122,008,481	$1,211,289,526	$1,337,158,129
Delayed Remission of Premium (Agents' Balances)						
(8)	Agents' Balances - premium due < 90 days (% of net written premium)	16.25%	15.62%	15.19%	14.48%	14.32%
(9)	Factor for Agents' Balances due > 90 days	1.021	1.021	1.021	1.021	1.020
(10)	Delayed Remission; = (1) x (8) x (9)	$428,204,613	$438,369,430	$454,078,999	$460,945,329	$499,380,202
Loss and Loss Adjustment Expense (LAE) Reserve						
(11)	Expected Loss and LAE Expense Ratio	62.23%	61.72%	60.27%	60.22%	60.13%
(12)	Expected Incurred Loss and LAE; = (1) x (11)	$1,605,984,846	$1,696,406,236	$1,764,639,164	$1,877,661,818	$2,055,666,786
(13)	Expected Loss and LAE Reserve Ratio; = (13d / 13a) x (1 + 13e) / (1 + 13f)	25.34%	42.64%	31.09%	37.09%	32.62%
	(13a) Current Calendar Year Incurred Losses	2,349,919,704	1,561,396,362	1,861,156,269	1,592,119,157	2,316,094,568
	(13b) Prior Year Loss Reserves as of 12/31	398,416,653	732,364,300	526,638,529	583,782,316	560,103,530
	(13c) Current Year Loss Reserves as of 12/31	732,364,300	526,638,529	583,782,316	560,103,530	896,965,689
	(13d) Average Loss Reserves; = [(13b) + (13c)] / 2	565,390,477	629,501,415	555,210,423	571,942,923	728,534,610
	(13e) Ratio of LAE Reserves to Loss Reserves	18.70%	21.30%	18.80%	17.20%	17.60%
	(13f) Ratio of Incurred LAE to Incurred Losses	12.70%	14.70%	14.00%	13.50%	13.40%
(14)	Expected Average Loss and LAE Reserves; = (12) x (13)	$406,971,233	$723,287,218	$548,582,910	$696,508,222	$670,565,007
Total Net Reserves Subject to Investment						
(15)	Total Net Subject to Investment; = (7) - (10) + (14)	$995,032,897	$1,354,004,215	$1,216,512,392	$1,446,852,419	$1,508,342,934
Average Rate of Return						
(16)	Net Investment Income Earned	$57,671,857	$57,196,089	$54,400,669	$56,623,677	$72,872,018
(17)	Average Cash and Invested Assets	1,734,094,329	1,824,395,370	1,976,949,891	2,156,812,439	2,252,298,716
(18)	Average Rate of Return; = (16) / (17)	3.33%	3.14%	2.75%	2.63%	3.24%
(19)	Investment Earnings on Net Subject to Investment; = (15) x (18)	$33,092,430	$42,448,993	$33,475,349	$37,984,807	$48,801,694
(20)	Average Rate of Return as % of Direct Earned Premium; = (19) / (1)	1.28%	1.54%	1.14%	1.22%	1.43%
(21)	Federal Income Tax Rate; From Section E, Page 29	14.9%	15.9%	15.6%	15.6%	16.8%
(22)	Average Rate of Return after Federal Income Tax; = (20) * [1 - (21)]	1.09%	1.30%	0.96%	1.03%	1.19%

(1), (2), (3), (8), (13a), (13b), (13c), (16), (17) Aggregate North Carolina Homeowners information from Statutory Page 14 of Annual Statement
(5), (11) from NCRB's selected expense, profit, contingency, and dividend ratios
(9) Based on data provided by A.M. Best
(13e), (13f) From A.M. Best Aggregate Insurance Expense Exhibit

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (10a)
Federal Income Tax Rate

Federal Income Tax Rate	2018 Investment Income	Tax Rate	2019 Investment Income	Tax Rate	2020 Investment Income	Tax Rate	2021 Investment Income	Tax Rate	2022 Investment Income	Tax Rate
(1) Taxable Bonds	$26,161,755	21.0%	$29,410,180	21.0%	$28,339,436	21.0%	$27,544,890	21.0%	$31,344,552	21.0%
(2) Non-Taxable Bonds	8,708,550	0.0%	7,801,848	0.0%	7,246,012	0.0%	6,758,330	0.0%	6,002,744	0.0%
(3) Sub-total / Weighted Average	$34,870,305	15.8%	$37,212,028	16.6%	$35,585,448	16.7%	$34,303,220	16.9%	$37,347,296	17.6%
(4) Taxable Stocks	$7,974,536	10.5%	$8,917,321	10.5%	$8,494,491	10.5%	$9,209,605	10.5%	$10,535,257	10.5%
(5) Non-Taxable Stocks	4,005,063	0.0%	1,595,409	0.0%	2,429,550	0.0%	3,215,338	0.0%	3,239,275	0.0%
(6) Sub-total / Weighted Average	$11,979,599	7.0%	$10,512,730	8.9%	$10,924,041	8.2%	$12,424,943	7.8%	$13,774,532	8.0%
(7) Mortgage Loans	$908,739	21.0%	$996,462	21.0%	$1,029,624	21.0%	$1,149,755	21.0%	$1,409,516	21.0%
(8) Real Estate	1,937,053	21.0%	2,035,516	21.0%	1,999,576	21.0%	1,995,897	21.0%	1,933,525	21.0%
(9) Collateral Loans	5,854	21.0%	202	21.0%	17,597	21.0%	91	21.0%	202	21.0%
(10) Cash on Deposit	1,985,735	21.0%	2,501,850	21.0%	820,107	21.0%	139,788	21.0%	1,968,882	21.0%
(11) Short-term Investments	(116,536)	21.0%	(92,602)	21.0%	(183,091)	21.0%	46,945	21.0%	112,071	21.0%
(12) All Other	12,020,161	21.0%	9,880,010	21.0%	10,043,526	21.0%	12,669,731	21.0%	22,739,012	21.0%
(13) Sub-total / Weighted Average	$16,741,006	21.0%	$15,321,438	21.0%	$13,727,339	21.0%	$16,002,207	21.0%	$28,163,208	21.0%
(14) Total; = (3) + (6) + (13)	$63,590,910	15.5%	$63,046,196	16.4%	$60,236,828	16.1%	$62,730,370	16.1%	$79,285,036	17.2%
(15) Investment Deductions	$5,919,053	21.0%	$5,850,107	21.0%	$5,836,159	21.0%	$6,106,693	21.0%	$6,413,018	21.0%
(16) Net Investment Income Earned	$57,671,857		$57,196,089		$54,400,669		$56,623,677		$72,872,018	
(17) Federal Income Tax Rate		14.9%		15.9%		15.6%		15.6%		16.8%

All investment income and investment deductions based on A.M. Best's Aggregates and Averages; Underwriting & Investment Exhibit, Part 1, Col. 8
(4) = Only 50% of dividend income from held securities is subject to tax, hence the tax rate on stocks =21% x 0.50 = 10.5%
(17) weighted average of (14) and (15)

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (11)
Statistical Plans & Programs

(11a)   The list below identifies the applicable data calls and the data utilized:

Data Calls

North Carolina Rate Bureau 2023 Mobile Homeowners Data Call
Annual Statement for Calendar Year 2022
Insurance Expense Exhibit for Calendar Year 2022
RB Calls for 2022 North Carolina Expense Experience
Mobile Home Census Data

(11b)   The North Carolina Rate Bureau certifies that there is no evidence known to it or, insofar as it is aware following reasonable inquiry, to Milliman that the data which were collected under the data calls identified in response (11)(a) above and used in the filing are not materially true and accurate representations of the experience of the companies whose data underlie such experience. While the Rate Bureau is aware that the collected data sometimes require corrections or adjustments, the Rate Bureau's review of the data, the data collection process, and the ratemaking process indicates that the aggregate data are reasonable and reliable for ratemaking purposes. See also the prefiled testimony of P. Anderson.

(11c)   1. After receiving the data provided by each member company, each data set is checked to verify that all fields represented as part of each plan are included in the data and that the values for each record are appropriate for the given field. For instance, numeric fields are checked to make sure that only numeric data is reported.

2. Record count and exposure distributions are then summarized for every field included in each dataset to identify unusual, unexpected, or missing values as well as unintuitive distributional relationships.

3. Univariate statistical summaries are then run on all numeric fields, such as premiums, losses, and exposures, to identify outliers or unusual values.

4. When appropriate, records with missing values are overridden to an appropriate null or missing value. For instance, for numeric fields such as claim counts and losses, records with missing values are set to 0. For text fields, records with missing values might be set to "Missing."

5. Loss, premium, and exposure data by individual company was then summarized and compared to data provided by member companies from the most recent Mobile Homeowners MH(F) filing for consistency. When inconsistencies are noted, the member companies are subsequently notified so that the inconsistencies can be verified.

6. Incurred loss, written and earned premium, and exposure data was aggregated across all member companies and summarized by calendar / accident year to compare against data from the most recent Mobile Homeowners MH(F) filing for consistency.

7. The average written premium, average earned premium, average incurred severity, frequency, and incurred pure premium are summarized by member company and in aggregate for each field included in each dataset. These metrics are also summarized for each field by calendar / accident year, policy form, and coverage. The summaries are also compared to data summaries from the most recent Mobile Homeowners MH(F) filing for consistency, to the extent that prior data is available. These summaries were reviewed to identify inconsistencies in the data. When inconsistencies are noted, the member companies are subsequently notified so that the inconsistencies can be verified.

**North Carolina
Mobile Homeowners
MH(F)**

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (12)

Not applicable to Mobile Homeowners rate filings.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (13)
Required Surplus

(13a) The weighted average premium to surplus ratios (weighted by North Carolina Mobile Homeowners Direct Premiums Written) for the calendar years 2013-2022 for the company groups that wrote the coverages in each of those years, based on data from the North Carolina Rate Bureau and S&P Global Market Intelligence, are:

Calendar Year	Premium to Surplus Ratio
2013	1.20
2014	1.24
2015	1.23
2016	1.25
2017	1.38
2018	1.45
2019	1.36
2020	1.27
2021	1.34
2022	1.52

(13b) The expected weighted average premium to surplus ratio for all companies writing Mobile Homeowners insurance during the years the proposed rates are expected to be in effect is estimated to be 1.32. See the prefiled testimony of G. Zanjani.

(13c) The necessary level of capital and surplus to support particular coverages varies by line, and the Rate Bureau regards the ratios shown in (a) as indicative of levels typical within the industry for the lines of business covered by this filing. The actual level of capital and surplus needed to support premium writings without endangering the solvency of a company is dependent upon (among others) the financial structure and investments unique to each company, the relationship of the company with affiliated companies as a group (and the experience of the affiliated companies), the mix of business of each company, and the conditions of the economy as they affect each company's individual circumstances. The Rate Bureau is advised that the National Association of Insurance Commissioners, as one of several criteria, generally considers that a premium to surplus ratio for an individual company of 3 to 1 warrants close regulatory attention and monitoring with respect to the company's solvency position.

(13d) The Rate Bureau has determined the premium to surplus ratios for Mobile Homeowners insurance in North Carolina based on the weighted average premium to surplus ratios for insurance groups writing Mobile Homeowners insurance in North Carolina, where the weights are the actual premiums written. The premium to surplus ratios of the insurers actually writing this business in North Carolina are representative of the leverage relevant for this line and state. The Rate Bureau has not further allocated surplus within these insurers across lines and states in this or other filings in North Carolina.

North Carolina
Mobile Homeowners
MH(F)

North Carolina Administrative Code (NCAC) Title 11, Chapter 10.1105, Section (14)
Additional Information Requested by the Commissioner

(14a) See pre-filed testimony of G. Zanjani and P. Anderson.

(14b) Not applicable to Mobile Homeowners rate filings.

(14c) Not applicable to Mobile Homeowners rate filings.

(14d) The items below summarize the changes in methodology, approach, or presentation from that used in the Rate Bureau's 2022
Mobile Homeowners rate filing:

    (1) The historical expense data was restated to reflect the member companies currently writing policies in this Mobile Homeowners program. The
need for the restatement is due to one member company transferring its MH(F) policies to the MH(C) policy form during 2022.

    (2) In this filing, the Rate Bureau determined the compensation for assessment risk provision in a different manner than in the 2022 mobile
homeowners MH(F) filing. In prior filings, the Rate Bureau retained Milliman to develop the compensation for assessment risk provision. Due to
the lack of availability of the detailed data required for the 2022 filing, Milliman relied on data from prior Rate Bureau property rate filings to
determine the provision for the 2022 filing. With this filing, Aon confirmed that they had access to the necessary detailed data and, as such, the
Rate Bureau retained Aon to develop the compensation for assessment risk provision. Aon used simulated event-level hurricane losses based
on the most recent exposure year and replicated the methodology used by Milliman in the 2018 mobile homeowners MH(F) filing. To reflect
that some insurance companies no longer retain exposure to assessments from the Beach and FAIR Plans pursuant to the companies'
respective reinsurance agreements, Aon then modified the calculated compensation for assessment risk provision by multiplying it by 50%.

    See also prefiled testimony of P. Anderson.

North Carolina

Mobile Homeowners Policy

MH(F) Program

MOBILE HOMEOWNERS POLICY: MH(F) PROGRAM   NORTH CAROLINA

RULES

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1. GENERAL INSTRUCTIONS

The Mobile Homeowners Policy provides property and liability coverage using the forms and endorsements herein. This manual also contains the rules governing the writing of the Mobile Homeowners Policy. The rules, rates, forms and endorsements filed by or on behalf of the Company for each coverage shall govern in all cases not specifically provided for herein.

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2. POLICY AND FORMS AND DESCRIPTION OF COVERAGE

The following is a general description of the coverages provided by the individual Mobile Homeowners Forms. The Policy and Forms should be consulted for exact contract conditions.

a. Section I Coverages – Property Damage

Coverage A – Dwelling
Coverage B – Other Structures
Coverage C – Personal Property
Coverage D – Loss of Use

(1) Form MH(F)-2 BROAD FORM. Covers dwelling, other structures, personal property and loss of use against loss by:

- Fire or Lighting
- Windstorm or Hail
- Explosion
- Riot or Civil Commotion
- Aircraft
- Vehicles
- Smoke
- Breakage of Glass
- Theft
- Flood
- Falling Objects
- Vandalism or Malicious Mischief
- Weight of ice, snow or sleet
- Collapse of Buildings
- Accidental discharge of Water or Steam
- Freezing of plumbing, heating systems and appliances
- Sudden and Accidental injury from electrical currents
- Sudden and Accidental tearing apart of heating systems and appliances

(2) Form MH(F)-3 COMPREHENSIVE FORM. Covers dwelling, other structures, and loss of use against all risks of physical loss, with certain exceptions. Personal property is covered for the same perils as provided in Form MH(F)-2 BROAD FORM.

(3) Form MH(F)-4 CONTENTS BROAD FORM. Covers personal property, including the Insured's interest in building additions and alterations and loss of use, against loss by the same perils as provided in Form MH(F)-2 BROAD FORM.

b. Section II Coverages – Liability - All Forms

Coverage E – Personal Liability

Coverage F – Medical Payments to Others

(1) Personal Liability – Covers payment on behalf of the Insured of all sums which he shall become legally obligated to pay as damages because of bodily injury or property damage caused by an occurrence arising out of his premises or personal activities.
(2) Medical Payments to Others – Covers medical expenses incurred by persons, other than the Insured, who sustain bodily injury caused by an accident arising out of the Insured's premises or personal activities.

3. ELIGIBILITY

a. Form MH(F)-1 not filed or approved under this program.

b. Form MH(F)-2, MH(F)-3 – A Mobile Homeowners Policy may be issued:
   To an owner occupant of a mobile home which is used exclusively for private residential purposes (except as provided in **General** Rule 3.f.) and contains not more than two families and with not more than two boarders or roomers.

c. Form MH(F)-4 – A Mobile Homeowners Policy may be issued only to:
   The Tenant (non-owner) of a mobile home; provided the residence premises occupied by the insured is used exclusively for residential purposes (except as provided in General Rule 3.f.) and is not occupied by more than one additional family or more than two boarders or roomers.

d. When a mobile home is occupied by co-owners, a Mobile Homeowners Policy providing Coverage A & B may be issued to only one of the co-owners and endorsed to cover the interest of the other co-owner in the mobile home and appurtenant private structures and for premises liability.

   Attach Endorsement MH(F)-23 Additional Insured - Residence Premises. A separate Mobile Homeowners Policy with FORM MH(F)-4 may be issued to the second co-owner.

e. It is permissible to extend the Mobile Homeowners Policy, without additional premium charge, to cover the interest of a non-occupied joint owner(s) in the mobile home(s) and for premises liability.

   Attach Endorsement MH(F)-23 Additional Insured

f. Subject to all other sections of this rule, a Mobile Homeowners Policy may be issued to cover a seasonal mobile home and such mobile home shall be described as 'Seasonal Mobile Home' in the policy.

g. Incidental office, professional, private school and studio occupancies are permitted provided:

   (1) the premises is occupied principally for mobile home purposes;

   (2) there is no other business conducted on the premises; and

   (3) there is no increase in the applicable fire rate for such occupancy.

h. A Mobile Homeowners Policy shall not be issued covering any property to which farm forms or rates apply under the rules filed by or on behalf of the Company. In no event shall a policy be issued to cover any property situated on premises used for farming purposes, unless farming conducted thereon is only incidental to the occupancy of the premises by the Insured as a mobile home and farming is not the occupation of the Insured.

i. A Travel Trailer which is defined as "a recreational vehicle equipped with temporary living quarters, including cooking and eating facilities" is not eligible for this program.

4. MANDATORY COVERAGES

a. It is mandatory that insurance be written for all coverages provided under both Sections I and II of the Mobile Homeowners Policy, except for those optional coverages provided for under General Rule 8 of this manual.

b. Section II of the policy requires coverage for the following exposures and the additional premium developed must be charged when such exposures exist.

   (1) All additional residence premises where the Named Insured or spouse maintain a residence other than business or farm properties;
   (2) All residence employees of the Named Insured or spouse not covered or not required to be covered by Workers' Compensation Insurance (charge required for residence employees in excess of two); and
   (3) Incidental office, professional private school or studio occupancies by the insured on residential premises of the Insured.

5. OFFICE, PROFESSIONAL, PRIVATE SCHOOL OR STUDIO OCCUPANCY

a. When the Insured maintains an incidental office, professional, private school or studio occupancy in the mobile home or in a separate structure on the premises, which otherwise meets the eligibility requirements, an additional premium for the increased Coverage C limit and for the liability exposure must be charged. Under a Mobile Homeowners Policy with Form MH(F)-4, the minimum limit of liability for Coverage C shall be $2,000.

   Attach Endorsement MH(F)-24 Office, Professional, Private School or Studio Use - Residence Premises

b. When the insured gives professional instruction, such as music, dancing or similar instruction in the mobile home, employs no assistants and there has been no physical alteration of the mobile home to accommodate the occupancy, the additional premium for the liability exposure must be charged.

Attach Endorsement MH(F)-24 Office, Professional, Private School or Studio Use - Residence Premises

c. When the Insured has permissible office, professional, private school or studio occupancy in an additional residential premises occupied by the insured, other than the described mobile home, the additional premium for the liability exposures must be charged.

Attach Endorsement MH(F)-25 Office, Professional, Private School or Studio Use - Other Residence

6. LIMITS OF LIABILITY

a. The limits of liability required under the Mobile Homeowners Policy are as follows:

Section I Coverage	MH(F)-2	MH(F)-3	MH(F)-4
A. Dwelling Minimum Limit	$2,000	$2,000	
B. Other Structures	10% of Mobile Home	10% of Mobile Home	
C. Personal Property	30% of Mobile Home	30% of Mobile Home	$500
D. Loss of Use	10% of Mobile Home	10% of Mobile Home	10% of Unscheduled Personal Property

Section II Coverage	All Forms
E. Personal Liability	$25,000 Each Occurrence
F. Medical payments to Others	$500 Each Person $25,000 Each Accident

b. ALL FORMS - The limit of liability for Coverage C of Section I and Coverages E or F of Section II may be increased. See General Rule 8.

c. FORM MH(F)-2, MH(F)-3 – Under Coverage B of Section I an additional amount of insurance may be written on a specific private structure. See General Rule 8.

7. DEDUCTIBLES

a. All Mobile Homeowners Forms contain a $50 Loss Deductible Clause applicable to loss under Section I of the policy except loss under Coverage D, Fire Department Service Charge and Emergency Removal Expense.

b. FORM MH(F)-2, MH(F)-3 & MH(F)-4 – The Mobile Homeowners Policy may be endorsed to provide a flat (non-disappearing) deductible in the amount of $100, $250, $500, $750, $1,000, $2,000, or $5,000 at a premium credit.

c. Optional $100 or $250 Flat Theft Deductible

FORM MH(F)-2, MH(F)-3, MH(F)-4 – The Mobile Homeowners Policy may be endorsed to provide a flat (non-disappearing) deductible in the amount of $100 or $250 applicable to any loss caused by theft of property only covered under Coverage C of the policy. This deductible shall be applied to the amount of each adjusted loss. A premium credit is applicable.

d. Optional Windstorm or Hail Deductibles – Territories 110, 120, 130, 140, 150, and 160 only

In territories 110, 120, 130, 140, 150, and 160 only, the Mobile Homeowners Policy may be endorsed to provide an optional Windstorm or Hail Deductible used in conjunction with the deductibles applicable to All Other Perils. This option provides for higher dollar deductible amounts of $1,000, $2,000, $5,000, 1%, 2%, or 5% when the higher deductible amount selected exceeds the deductible applicable to All Other Perils.

e. Optional Named Storm Percentage Deductible – Territories 110, 120, 130, 140, 150, and 160 only

In territories 110, 120, 130, 140, 150, and 160 only, the Mobile Homeowners Policy may be endorsed to provide a Named Storm Percentage Deductible of 1%, 2%, or 5% of the Coverage A or C limit of liability, whichever is greater, when the dollar amount of the percentage deductible exceeds the deductible applicable to All Other Perils. Use MH(F)-58, Named Storm Percentage Deductible.

8. OPTIONAL COVERAGES

a. Section I - Property Damage - The Coverage may be amended as follows:

(1) Other Structures - Increased Limit

An additional amount of insurance may be written on a specific private structure under Coverage B at an additional premium.

Attach Endorsement MH(F)-28 Other Structures.

(2) Credit Card, Forgery, and Counterfeit Money Coverage

The Mobile Homeowners Policy may be extended to include coverage against loss by forgery or alteration in connection with credit cards, checks or drafts, or loss due to acceptance of counterfeit paper currency at an additional premium.

Attach Endorsement MH(F)-29 Credit Card, Forgery, and Counterfeit Money Coverage

(3) Money and Securities

Increased limits on money, bullion, numismatic property, bank notes, and on securities, accounts, bills, deeds, evidences of debt, letters of credit, notes other than bank notes, passports, railroad and other tickets and stamps, including philatelic property, may be provided at an additional premium.

The $100 limit on money may be increased by an amount not exceeding $400 and the $500 limit on securities may be increased by an amount not exceeding $500.

Attach Endorsement MH(F)-32 Coverage C - Increased Special Limits of Liability

(4) Theft Coverage Extension

FORM MH(F)-2, MH(F)-3, MH(F)-4 - Coverage may be extended to include loss by theft of property while unattended in or on any vehicle or watercraft at an additional premium.

Attach Endorsement MH(F)-27 Theft Coverage Extension

(5) Personal Property

(a) Increased Limit - All Forms

The limit of liability for Coverage C may be increased at an additional premium.

(b) Away from Premises - FORM MH(F)-2, MH(F)-3, MH(F)-4 The limit of liability on unscheduled personal property away from premises under Coverage C may be increased at an additional premium.

Attach Endorsement MH(F)-33 Coverage C - Away from Premises

(6) Earthquake Damage

The Additional Exclusion section may be amended to include direct loss caused by earthquake and volcanic eruption at an additional premium. A deductible in the amount of 2% is mandatory.

Attach Endorsement MH(F)-43 Earthquake

(7) Fire Department Service Charge

The limit of $100 in the policy may be increased to $250 or $500 at an additional premium.

Attach Endorsement MH(F)-45 Fire Department Service Charge

b. Scheduled Personal Property

Coverage may be provided against all risks of physical loss with certain exceptions on scheduled personal property subject to the rules and rates filed by or on behalf of the Company. This coverage is subject to an annual minimum premium of $15 irrespective of the term of the Mobile Homeowners Policy.

Attach Endorsement MH(F)-31 Scheduled Personal Property Endorsement

c. Lienholder's Single Interest

Coverage may be provided to cover the interest of the lienholder from the loss caused by collision, upset, conversion, embezzlement or secretion at an additional premium. Repossession and return protection is included. This coverage should be provided only when requested by the lienholder.

Attach Endorsement MH(F)-21 Mobile Home Lienholder's Single Interest

d. Trip Collision

This coverage may be provided to protect the Insured from loss caused by collision or upset at an additional premium. A $100 deductible is mandatory.

Attach Endorsement MH(F)-22 Trip Collision

e. Consent to Move Mobile Home

This extension of coverage may be provided to avoid termination of coverage when the mobile home is moved and without reduction of coverage while the mobile home is away from the described premises (but not for collision or upset) at an additional premium.

Attach Endorsement MH(F)-20 Consent to Move Mobile Home

f. Scheduled Glass

Coverage may be added for specified glass at the premiums filed by the Company.

Attach Endorsement MH(F)-44 Scheduled Glass

g. Section II - Liability

The Limit of Liability for Coverage E or F may be increased at an additional premium and the following coverage may also be added to the Mobile Homeowners Policy:

Note: Workers' Compensation coverage or liability on a non-comprehensive basis shall not be added to the Mobile Homeowners Policy.

(1) Additional Residence Premises - Rented to Others

Coverage may be provided for additional one or two family residence premises, rented to others, owned by the Named Insured or spouse, at an additional premium.

Attach Endorsement MH(F)-34 Additional Residence - Rented to Others, 1 or 2 Families

(2) Business Pursuits

Coverage may be provided for the liability of an insured arising out of business activities, other than a business of which he is sole owner or a partner, at an additional premium.

Attach Endorsement MH(F)-35 Business Pursuits

(3) Outboard Motors and Watercraft

Coverage is provided for watercraft powered by an outboard motor or combination of outboard motors not exceeding 25 total horsepower. Watercraft not covered under the policy may be insured at an additional premium.

Attach Endorsement MH(F)-36 Watercraft

(4) Owned Snowmobile

Each snowmobile owned by the Named Insured or any other insured who is a resident of the Named Insured's household must be declared. The premium charge shall apply separately to each snowmobile.

Attach Endorsement MH(F)-37 Snowmobile

(5) Farmers Comprehensive Personal Liability

Section II can be amended to provide for this coverage at an additional premium.

Attach Endorsement MH(F)-41 Farmers Comprehensive Personal Liability

9. TIE-DOWN CREDIT

When the mobile home is properly secured in accordance with the regulations of the North Carolina Building Code Council as set forth in the State of North Carolina Regulations for Mobile Homes, a credit of 10% shall be deducted from the applicable basic premium.

Attach Endorsement MH(F)-46 Mobile Home Tie-Down.

10. CHANGE ENDORSEMENT

Endorsement MH(F)-26 Change Endorsement, provides the minimum information requirements for any endorsement or change that takes place during the term of the policy. This endorsement must be used or the equivalent information provided.

11. POLICY TERM

The Mobile Homeowners Policy may be written for a term of one year. It is permissible to extend the policy for successive policy terms by extension certificate based upon the premiums in effect on renewal date. The then current editions of the applicable forms and endorsements must be made a part of the policy.

It is permissible to write for one or three year terms on the following bases:

- An annual policy which may be extended for successive terms by Certificate, subject to the rules, premiums, forms and endorsements then in effect.
- A three year policy with the premium payable in installments at the premium in effect on the anniversary dates.
- A three year policy with the premium prepaid at three times the annual premiums in effect at inception.

Endorsement MH(F)-39 Deferred Premium Payment applies.

12. OTHER INSURANCE

Credit for existing insurance is not permitted, except under Section II as provided for in the rate pages.

13. WHOLE DOLLAR PREMIUM RULE

All premiums shown on the policy and endorsements shall be rounded to the nearest whole dollar. A premium of fifty cents ($0.50) or more shall be rounded to the next higher whole dollar. In the event of cancellation by the Company, the return premium may be carried to the next higher whole dollar.

14. INTERPOLATION OF PREMIUMS FOR POLICY AMOUNTS NOT SHOWN ON PREMIUM CHARTS

Premiums for limits of liability in excess of the minimums required, not shown in the premium charts, may be obtained by interpolation.

15. INCREASES IN LIMITS OF LIABILITY OR ADDITION OF COVERAGES

The limits of liability may be increased or coverage may be added during the term of the policy. Any additional premium shall be computed on a pro-rata basis subject to all the rules of this manual.

16. MINIMUM ADDITIONAL PREMIUM

When an endorsement requiring an additional premium is issued subsequent to the inception date of the policy, such total additional premium shall not be less than $6.00 regardless of the unexpired policy period.

17. CANCELLATION OR REDUCTIONS IN LIMITS OF LIABILITY OR COVERAGES

It shall not be permissible to cancel any of the mandatory coverages in the policy unless the entire policy is cancelled.

If insurance is cancelled or reduced at the request of the Company, or in the event of foreclosure of the mortgage or other lien on the insured mobile home, the earned premium shall be computed on a pro-rata basis.

If insurance is cancelled or reduced at the request of the Insured, the earned premium shall be computed on a short rate basis, using the standard short rate tables subject to a minimum retained premium of $25.00 unless rewritten by another Mobile Homeowners Policy in this Company.

18. TRANSFER OR ASSIGNMENT

Subject to all the rules of this manual, any necessary adjustment of premium, and with permission of the Company, a Mobile Homeowners Policy may be endorsed to effect:

a. transfer to another location within the same state; or

b. assignment from one insured to another in the event of transfer of title of the mobile home.

19. RESTRICTION OF INDIVIDUAL POLICIES

If a Mobile Homeowners Policy would not be issued because of unusual circumstances or exposures, the Named Insured may request a restriction of the policy provided no reduction in the premium is allowed. Such requests shall be referred to the Company and must be handled in accordance with consent to rate statutes.

20. REPLACEMENT COST - COVERAGES A AND B

Coverage may be provided on a replacement cost basis for Coverage A and B, at an additional premium.

Attach Endorsement MH(F)-48 Replacement Cost Loss Settlement

21. INFLATION GUARD ENDORSEMENT

Form MH(F)-2 and MH(F)-3 Limits of Liability on Coverage A, B, C, and D are automatically increased by the amount of quarterly increase shown on the endorsement for an additional charge.

Attach Endorsement MH(F)-50

22. PERSONAL PROPERTY REPLACEMENT COST

Form MH(F)-2 and MH(F)-3 Coverage C may be extended to include full cost of repair or replacement at an additional premium.

Attach Endorsement MH(F)-51

23. COVERAGE B - OFF PREMISES

Forms MH(F)-2 and MH(F)-3 Coverage B - Other structures may be extended to cover other structures which are located off the residence premises at an additional charge.

Attach Endorsement MH(F)-52

24. WINDSTORM OR HAIL EXCLUSION - TERRITORIES 110, 120, 130, 140, 150, and 160 ONLY

The peril of Windstorm or hail may be excluded if:

a. The property is located in an area eligible for such coverage from the North Carolina Insurance Underwriting Association; and

b. A Windstorm or Hail Rejection form is secured and maintained by the company.

Attach Endorsement MH(F)-54 Windstorm or Hail Exclusion.

When Endorsement MH(F)-54 is attached to the policy, enter the following on the Declaration Page:

"This policy does not provide coverage for the peril of Windstorm or Hail."

25. MOBILE HOME STATED VALUE LOSS SETTLEMENT

For an additional premium, your policy may be changed to reflect a stated value for the covered mobile home. For rate information, see Rate Section.

Attach MH(F)-310 (Ed. 9-97)

26. OPTIONAL RATING CHARACTERISTICS

Companies may use the following optional rating characteristics or any combination of such optional rating characteristics and Bureau filed characteristics to determine rates, as long as applicable legal requirements are satisfied. The resulting premium shall not exceed the premium that would have been determined using the rates, rating plans, classifications, schedules, rules and standards promulgated by the Bureau, except as provided by statute. The rating factor for any combination of the following optional risk characteristics cannot exceed 1.00 unless the resulting premium does not exceed the Bureau premium.

    a. Policy characteristics not otherwise recognized in this manual. Examples include: account or multi-policy credit; tiers; continuity of coverage; coverages purchased; intra-agency transfers; payment history; payment options; prior insurance; and new and renewal status.

    b. Policyholder/Insured personal characteristics not otherwise recognized in this manual. Examples include: Smoker/non-smoker status; credit information; loss history; loss prevention training/education; age; work status; marital status; number of years owned; owned real estate; household composition; and good student/education.

    c. Dwelling characteristics not otherwise recognized in this manual. Examples include: Gated community; retirement community; limited access community; mobile home community; revitalized/renovated home; security, safety or loss deterrent systems or devices; age of home; occupancy; fire protection/distance to fire department; and construction type and quality.

    d. Affinity group or other group not otherwise recognized in this manual.

    e. Any other rating characteristics or combination of characteristics if filed by a company and approved by the Commissioner.

27. INSTALLMENT PAYMENT PLAN

When a policy is issued on an installment basis, the following rules apply:

The first installment shall be due on the effective date of the policy and the due date of the last installment shall be no later than one month prior to the policy anniversary date.

An additional charge of $3.00 shall be made for each installment.

The premium calculated for the first installment payment, exclusive of installment charges, shall not be less than the pro rata charge for the period from the inception date of policy to the due date of the next installment.

28. TERRITORY GROUPS

For rating purposes, territories are grouped as follows:

    Territory Group 1: Territories 110, 120, 130, and 140

    Territory Group 2: Territories 150 and 160

    Territory Group 3: Territories 180, 190, 200, 210, 220, and 230

    Territory Group 4: Territories 170, 240, and 250

    Territory Group 5: Territories 260, 270, 280, 290, and 300

    Territory Group 6: Territories 310, 320, 330, 340, 350, 360, 370, 380, and 390

OWNERS FORMS TERRITORY GROUP 3; $50 DEDUCTIBLE						TENANTS FORM TERRITORY GROUP 3; $50 DEDUCTIBLE		
Amount of Insurance				Premium		Amount of Insurance		Premium
A	B	C	D	MH(F)-2	MH(F)-3	C	D	MH(F)-4
$2,000	$200	$600	$200	$414.00	$472.00	$2,000	$200	$60.00
3,000	300	900	300	428.00	489.00	3,000	300	74.00
4,000	400	1,200	400	444.00	509.00	4,000	400	88.00
5,000	500	1,500	500	462.00	527.00	5,000	500	101.00
6,000	600	1,800	600	476.00	545.00	6,000	600	115.00
7,000	700	2,100	700	495.00	563.00	7,000	700	130.00
8,000	800	2,400	800	510.00	583.00	8,000	800	142.00
9,000	900	2,700	900	527.00	603.00	9,000	900	157.00
10,000	1,000	3,000	1,000	544.00	619.00	10,000	1,000	170.00
11,000	1,100	3,300	1,100	559.00	638.00	11,000	1,100	184.00
12,000	1,200	3,600	1,200	577.00	658.00	12,000	1,200	197.00
13,000	1,300	3,900	1,300	591.00	677.00	13,000	1,300	210.00
14,000	1,400	4,200	1,400	608.00	694.00	14,000	1,400	223.00
15,000	1,500	4,500	1,500	618.00	708.00	15,000	1,500	236.00
20,000	2,000	6,000	2,000	696.00	801.00	20,000	2,000	302.00
25,000	2,500	7,500	2,500	776.00	897.00	25,000	2,500	368.00
30,000	3,000	9,000	3,000	853.00	990.00	30,000	3,000	434.00
35,000	3,500	10,500	3,500	932.00	1,085.00	35,000	3,500	500.00
40,000	4,000	12,000	4,000	1,011.00	1,177.00	40,000	4,000	565.00
45,000	4,500	13,500	4,500	1,088.00	1,274.00	45,000	4,500	631.00
50,000	5,000	15,000	5,000	1,168.00	1,368.00	50,000	5,000	697.00
55,000	5,500	16,500	5,500	1,246.00	1,463.00			
60,000	6,000	18,000	6,000	1,325.00	1,556.00			
65,000	6,500	19,500	6,500	1,403.00	1,649.00			
70,000	7,000	21,000	7,000	1,480.00	1,744.00			
75,000	7,500	22,500	7,500	1,560.00	1,838.00			
80,000	8,000	24,000	8,000	1,638.00	1,933.00			
85,000	8,500	25,500	8,500	1,718.00	2,027.00			
90,000	9,000	27,000	9,000	1,795.00	2,122.00			
95,000	9,500	28,500	9,500	1,874.00	2,214.00			
100,000	10,000	30,000	10,000	1,953.00	2,311.00			
Each Add'l $1,000				$15.00	$19.00	Each Add'l $1,000		$13.00

Territory Group 1	Surcharge	48.1%	Territory Group 1	Surcharge	29.4%
Territory Group 2	Surcharge	21.5%	Territory Group 2	Surcharge	23.5%
Territory Group 4	Discount	-12.9%	Territory Group 4	Discount	-12.2%
Territory Group 5	Discount	-22.3%	Territory Group 5	Discount	-22.2%
Territory Group 6	Discount	-41.6%	Territory Group 6	Discount	-25.2%

1. DEDUCTIBLES

For the purpose of this rule, premium subject to deductible credits shall be the sum of the following:

(1) the premium developed from the Basic Premium Chart for Section 1 Deductible

(2) the premiums for amended limits of liability for Coverage C; and

(3) the premiums developed for all other Structures, Theft Coverage Extension and Coverage C - Increased Limits - Away from Premises, if applicable.

a. Optional Higher Flat Deductible

ALL FORMS - The Mobile Homeowners Policy may be endorsed to provide a flat (non-disappearing) deductible applicable to any loss under Section 1 of the policy in an amount and at a premium credit developed as follows. The Percentage of premium credit shall be applied to the premium developed above subject to the maximum premium credit indicated.

Owners – Section I Deductible						
Deductible Amount	**$100**	**$250**	**$500**	**$750**	**$1,000**	**$2,000**	**$5,000**
Percentage Credit	10%	20%	27%	31%	34%	42%	54%
Maximum Credit:							
Territory Group 1	$60.26	$120.50	$241.01	$421.77	$602.53	$1,068.88	$2,707.91
Territory Group 2	57.30	114.58	229.18	401.06	572.94	1,016.39	2,574.94
Territory Group 3	43.62	87.25	174.51	305.38	436.25	773.92	1,960.65
Territory Group 4	42.81	85.61	171.24	299.66	428.07	759.40	1,923.88
Territory Group 5	41.09	82.18	164.38	287.66	410.93	729.00	1,846.86
Territory Group 6	32.72	65.45	130.90	229.07	327.24	580.53	1,470.71

Tenants – Section I Deductible						
Deductible Amount	**$100**	**$250**	**$500**	**$750**	**$1,000**	**$2,000**	**$5,000**
Percentage Credit	10%	20%	27%	31%	34%	42%	54%
Maximum Credit:							
Territory Group 1	$43.41	$86.80	$173.60	$303.81	$434.01	$769.93	$1,950.54
Territory Group 2	41.43	82.86	165.71	290.00	414.28	734.93	1,861.88
Territory Group 3	30.52	61.04	122.08	213.64	305.20	541.42	1,371.65
Territory Group 4	26.91	53.82	107.63	188.36	269.08	477.35	1,209.31
Territory Group 5	23.86	47.71	95.42	166.99	238.56	423.20	1,072.14
Territory Group 6	22.94	45.89	91.78	160.61	229.44	407.03	1,031.17

b. Optional Flat Theft Deductible

ALL FORMS - The Mobile Homeowners Policy may be endorsed to provide a $100 or $250 Flat Theft Deductible applying to loss by Theft of property covered under Coverage C of the policy at a premium credit developed from the table below. The premium subject to this deductible shall be the sum of:

(1) the premium developed from the Basic Premium Chart;

(2) the premiums for amended limits of liability for Coverage C; and

(3) the premiums developed for Theft Coverage Extension and Coverage C Increased Limits Away from Premises, if applicable.

Theft Deductible Amount	Owners		Tenants	
	$100	**$250**	**$100**	**$250**
Percentage Credit	3%	5%	3%	5%
Maximum Credit:				
Territory Group 1	$24.10	$36.15	$17.36	$26.04
Territory Group 2	22.92	34.38	16.57	24.85
Territory Group 3	17.45	26.17	12.21	18.31
Territory Group 4	17.12	25.68	10.76	16.14
Territory Group 5	16.44	24.66	9.54	14.31
Territory Group 6	13.09	19.63	9.18	13.77

c. Optional Windstorm or Hail Deductibles Territory Groups 1 and 2 only

The Windstorm or Hail Deductible options are used in conjunction with the deductibles applicable to All Other Perils. This option provides for higher dollar deductible amounts of $1,000, $2,000, $5,000, 1%, 2%, or 5% when the higher deductible amount selected exceeds the deductible applicable to All Other Perils.

An endorsement is not required. Separately enter on the policy declarations the deductible amounts that apply to Windstorm or Hail and All Other Perils. For example: Deductible - $500 except $1000 for Windstorm or Hail.

The Windstorm or Hail Deductible factor applies to the $50 rate.

$1,000 WINDSTORM OR HAIL DEDUCTIBLE	
All Other Perils Deductible	**Deductible Factor**
$50	0.89
100	0.82
250	0.76
500	0.70
750	0.65
The amount of insurance on the structure must be at least $10,000.	

The Maximum $1,000 Windstorm or Hail Deductible credits by Territory Group are:
Territory Group 1 $602.53
Territory Group 2 $572.94

$2,000 WINDSTORM OR HAIL DEDUCTIBLE	
All Other Perils Deductible	**Deductible Factor**
$50	0.85
100	0.78
250	0.73
500	0.68
750	0.64
1,000	0.60
The amount of insurance on the structure must be at least $20,000.	

The Maximum $2,000 Windstorm or Hail Deductible credits by Territory Group are:
Territory Group 1 $1,205.05
Territory Group 2 $1,145.88

$5,000 WINDSTORM OR HAIL DEDUCTIBLE	
All Other Perils Deductible	**Deductible Factor**
$50	0.82
100	0.77
250	0.70
500	0.66
750	0.62
1,000	0.58
2,000	0.48
The amount of insurance on the structure must be at least $50,000.	

The Maximum $5,000 Windstorm or Hail Deductible credits by Territory Group are:
Territory Group 1 $1,928.09
Territory Group 2 $1,833.41

1% WINDSTORM OR HAIL DEDUCTIBLE	
All Other Perils Deductible	**Deductible Factor**
$50	0.97
100	0.89
250	0.81
500	0.72
The amount of insurance on the structure must be at least $25,000 for all other peril deductibles below 500 and $50,000 for an all other peril deductible equal to 500.	

The Maximum 1% Windstorm or Hail Deductible credits by Territory Group are:
     Territory Group 1 $133.90
     Territory Group 2 $127.32

2% WINDSTORM OR HAIL DEDUCTIBLE	
All Other Perils Deductible	**Deductible Factor**
$50	0.87
100	0.80
250	0.74
500	0.67
750	0.62
1,000	0.60
2,000	0.55
The amount of insurance on the structure must be at least $50,000 for all other peril deductibles below 2,000 and $100,000 for an all other peril deductible equal to 2,000	

The Maximum 2% Windstorm or Hail Deductible credits by Territory Group for All Other Peril Deductibles below 2,000 are:
     Territory Group 1 $848.84
     Territory Group 2 $807.15

The Maximum 2% Windstorm or Hail Deductible credits by Territory Group for the 2,000 All Other Peril Deductible are:
     Territory Group 1 $1,150.98
     Territory Group 2 $1,094.46

5% WINDSTORM OR HAIL DEDUCTIBLE	
All Other Perils Deductible	**Deductible Factor**
$50	0.77
100	0.70
250	0.65
500	0.59
750	0.55
1,000	0.52
2,000	0.46
5,000	0.41
The amount of insurance on the structure must be at least $50,000 for all other peril deductibles below 2,000 and $100,000 for any other all other deductibles	

The Maximum 2% Windstorm or Hail Deductible credits by Territory Group are:
     Territory Group 1 $3,196.73
     Territory Group 2 $3,039.75

d. Optional Named Storm Percentage Deductibles Territory Groups 1 and 2 only

ALL FORMS - The Mobile Homeowners Policy may be endorsed to provide a Named Storm Percentage Deductible of 1%, 2%, or 5% of the Coverage A or C limit of liability, whichever is greater, when the dollar amount of the percentage deductible exceeds the deductible applicable to All Other Perils. Use **MH(F) 58** Named Storm Percentage Deductible.

The credits displayed incorporate the credits for the All Perils Deductibles. Do not use the credits for the All Other Perils Deductibles when rating a policy with a higher Named Storm Percentage Deductible.

The Named Storm Percentage Deductible factor applies to the $50 Deductible rate.

Section 1: 1% Deductible - Owners					
All Other Perils Deductible	$50	$100	$250	$500	$1,000
Percentage Credit	5%	14%	24%	31%	37%
Maximum Credit:					
Territory Group 1	$31.72	$63.41	$126.85	$253.70	$634.24
Territory Group 2	$30.16	$60.30	$120.62	$241.24	$603.10

Section 1: 1% Deductible - Tenants					
All Other Perils Deductible	$50	$100	$250	$500	$1,000
Percentage Credit	5%	14%	24%	31%	37%
Maximum Credit:					
Territory Group 1	$22.84	$45.69	$91.37	$182.74	$456.84
Territory Group 2	$21.80	$43.62	$87.21	$174.44	$436.08

The amount of insurance on the structure must be at least $25,000 for an all other perils deductible equal to 50 or 100 and $50,000 for an all other perils deductible equal to 250, 500, or 1,000.

Section 1: 2% Deductible - Owners							
All Other Perils Deductible	$50	$100	$250	$500	$750	$1,000	$2,000
Percentage Credit	11%	19%	28%	32%	35%	39%	43%
Maximum Credit:							
Territory Group 1	$64.69	$112.11	$309.19	$512.15	$660.82	$894.00	$1,205.47
Territory Group 2	$61.51	$106.60	$294.01	$487.00	$628.37	$850.10	$1,146.27

Section 1: 2% Deductible - Tenants							
All Other Perils Deductible	$50	$100	$250	$500	$750	$1,000	$2,000
Percentage Credit	11%	19%	28%	32%	35%	39%	43%
Maximum Credit:							
Territory Group 1	$46.60	$80.76	$222.72	$368.91	$476.00	$643.96	$868.31
Territory Group 2	$44.47	$77.09	$212.59	$352.14	$454.36	$614.69	$828.84

The amount of insurance on the structure must be at least $25,000 for an all other perils deductible equal to 50 or 100; $50,000 for an all other perils deductible equal to 250, 500, 750, or 1,000; and $100,000 for an all other perils deductible equal to 2,000.

Section 1: 5% Deductible - Owners

All Other Perils Deductible	$50	$100	$250	$500	$750	$1,000	$2,000	$5,000
Percentage Credit	18%	26%	36%	40%	42%	44%	49%	58%
Maximum Credit:								
Territory Group 1	$109.68	$219.90	$708.65	$952.29	$1,068.88	$1,273.76	$2,024.98	$3,185.96
Territory Group 2	$104.29	$209.11	$673.85	$905.53	$1,016.39	$1,211.21	$1,925.54	$3,029.52

Section 1: 5% Deductible - Tenants

All Other Perils Deductible	$50	$100	$250	$500	$750	$1,000	$2,000	$5,000
Percentage Credit	18%	26%	36%	40%	42%	44%	49%	58%
Maximum Credit:								
Territory Group 1	$79.00	$158.40	$510.45	$685.95	$769.93	$917.51	$1,458.62	$2,294.88
Territory Group 2	$75.42	$151.20	$487.24	$654.77	$734.93	$875.80	$1,392.32	$2,190.57

The amount of insurance on the structure must be at least $25,000 for an all other perils deductible equal to 50 or 100; $50,000 for an all other perils deductible equal to 250, 500, 750, or 1,000; and $100,000 for an all other perils deductible equal to 2,000 or 5,000.

2. OPTIONAL COVERAGES

a. Other Structures Increased Limits

When an additional amount of insurance is written on a specific Other Structure, the premiums listed on the following page per $1,000 of insurance shall apply separately to each such structure.

FORM	INCREASED LIMIT RATE PER $1,000
MH(F)-2	$ 9
MH(F)-3	11

Attach Endorsement **MH(F) 28** Other Structures

b. Credit Card, Forgery and Counterfeit Money Coverage

When Credit Card, Forgery and Counterfeit Money Coverage is provided the additional premium shall be developed as follows:

Limit of Liability	Premium
$2,500	$3
5,000	5
10,000	6

For limits in excess of $10,000 refer to Company

Attach Endorsement **MH(F) 29** Credit Card, Forgery and Counterfeit Money.

c. Money and Securities - Increased Limit

When the limit of liability is increased on money or securities, the additional premium shall be developed as follows:

All Forms	Money	Securities
Per $100 of Insurance	$6	$4

The special limit of liability for theft of jewelry, watches and furs may be increased to $1,000 but not exceeding $500 for any one article. The additional premium shall be $9.

Attach Endorsement **MH(F) 32** Coverage C - Increased Special Limits of Liability.

d. Theft Coverage Extension

ALL FORMS - When the peril of Theft is extended to cover loss of property from unattended vehicles or watercraft, the additional premium shall be $3.

Attach Endorsement **MH(F) 27** Theft Coverage Extension.

e. Personal Property

(1) Increased Limit

When the limit of liability for Coverage C is increased, the additional premium shall be developed as follows:

Form	Per $1,000 of insurance
MH(F)-2 or MH(F)-3	$10

(2) Increased Limits - Away from Premises

When the limit of liability on personal property away from the premises under Coverage C is increased, the additional premium shall be developed as follows:

All Forms	Each Additional $1,000
Without Theft Extension	$ 9
With Theft Extension	13

Minimum Premium - $9 Minimum Retained Premium for this endorsement when cancelled separately.

Attach Endorsement **MH(F) 33** Coverage C Away From Premises

f. Mobile Home Lienholder's Single Interest

$10 per year, not subject to Short Rate adjustment. Covers lienholders interest from loss by collision, upset, conversion, embezzlement or secretion and repossession return expense.

Attach endorsement **MH(F) 21** Mobile Home Lienholder's Single Interest.

g. Trip Collision Coverage

In consideration of a fully earned premium of $15, the policy is extended to cover loss from collision or upset for a period of 30 days – Subject to a mandatory $100 deductible.

Attach endorsement **MH(F) 22** Trip Collision.

h. Consent to Move Mobile Home

In consideration of a fully earned premium of $10, the on premises limits are extended to wherever the mobile home may be, for a period of 30 days.

Attach endorsement **MH(F) 20** Consent to Move Mobile Home.

i. Earthquake Coverage

When Earthquake Coverage is provided it shall apply to all Section 1 Coverages for the same limits as provided under the policy. The premium for each $1,000 of insurance shall be developed as follows:

Form	Frame	Applied to:
MH(F)-2, MH(F)-3	0.40	Coverage A Limit
MH(F)-4	0.30	Coverage C Limit
MH(F)-2, MH(F)-3	0.30	Amount of Coverage C Increase Only
All Forms	0.40	Private Structure or Coverage D Increased or added limits

Attach endorsement **MH(F) 43** Earthquake.

j. Fire Department Service Charge

The limit may be increased as follows:

- Increase to $250 $2
- Increase to $500 $5

Attach endorsement **MH(F) 45** Fire Department Service Charge.

k. Tie-Down Credit

See general rule 9.

Attach endorsement **MH(F) 46** Mobile Home Tie-Down.

l. Replacement Cost Coverages A and B

When coverage is provided on a replacement cost basis, charge 5% of the premium from the Basic Premium Chart.

Attach **MH(F) 48** Replacement Cost Loss Settlement

m. Inflation Guard Coverage - Form MH(F)-2 and Form MH(F)-3

When the Limits of Liability on Coverages A, B, C & D are automatically increased in accordance with the provisions of the Inflation Guard Endorsement the annual additional premium shall be developed by applying the following charges to the annual premium for Coverage A.

Amount of Quarterly Increase	Charge
1.0%	1.50%
1.5%	2.25%
2.0%	3.00%
Each Add'l 0.5%	Add 0.75%

Minimum Annual Premium $1.00. Additional premium for three year policies shall be three times the annual premium.

Attach Endorsement **MH(F) 50** Mobile Homeowners Inflation Guard.

n. Personal Property Replacement Cost - Form MH(F)-2 and Form MH(F)-3

When Coverage C is extended to include full cost of repair or replacement without deduction for depreciation the additional premium shall be developed as follows:

- Manual charge to increase Coverage C limit to 40% of Coverage A.
- 5% surcharge to the adjusted total base premium (including the additional premium for the increased Coverage C limit). The surcharge shall be applied to the Total Adjusted Basic Premium before credit for optional higher deductible is applied. The minimum additional premium is $20.

Attach Endorsement **MH(F) 51** Personal Property Replacement Cost.

o. Coverage B - Off Premises - Form MH(F)-2 and Form MH(F)-3

When Coverage B - Off Premises is provided to cover other structures which are located off the residence premises, the additional charge shall be $33.

Attach Endorsement **MH(F) 52** Coverage B - Off Premises

p. Windstorm or Hail Exclusion Credit - Territory Groups 1 and 2 only

When the perils of windstorm or hail are excluded from coverage under Section I of the policy the following credits shall be deducted from the applicable basic premium.

FORM	Territory Group 1	Territory Group 2
MH(F) 2 and MH(F) 3	74.1%	70.4%
MH(F) 4	68.7%	49.2%

q. Mobile Home Stated Value Loss Settlement

When coverage is provided on a stated value basis, charge 3% of the premium from the premium rate table.

Attach endorsement **MH(F) 310** Stated Value Loss Settlement.

SECTION II COVERAGES – LIABILITY

3. GENERAL INSTRUCTIONS

When the limit of liability for Coverage E or F is increased or coverage for additional exposures is provided, the additional premium shall be developed from the following tables. The respective limits of liability for Coverage E and for Coverage F must be uniform for all exposures covered under the policy. Coverage F limits indicated below are "each person" limits and contemplate the basic limit of $25,000 each accident. Refer to Company for Limits in Excess of those shown.

		Limit of Liability													
Coverage E	**$25,000**			**$50,000**			**$100,000**			**$200,000**			**$300,000**		
Coverage F	None	500	1000	None	500	1000	None	500	1000	None	500	1000	None	500	1000
Residence Premises			3		1	4		2	5		4	7		6	9
Additional Residence Premises															
Occupied by Insured (1 or 2 Family)		3	4		4	5		5	6		6	7		7	8
Rented to Others* (1 Family)	3	6	7	4	7	8	5	8	9	6	9	10	7	10	11
Rented to Others* (2 Family)	5	8	9	6	9	10	7	10	11	8	11	12	9	12	13
Residence Employees**		2	3		3	4		4	5		5	6		6	7
*Attach Endorsement **MH(F) 34** Additional Residence Premises - Rented to Others.															
****Charge for each employee in excess of two other than employees whose time of employment is not more than half of the customary full time or to whom the Worker's Compensation exclusion applies as set forth in Section II of the policy.															

When coverage is provided by a Mobile Homeowners Policy for a Secondary Residence premises of an insured whose Primary Residence is covered by a Homeowners, Farmowners, or Mobile Homeowners Policy in the same company, the secondary premises shall be endorsed on Section II of the Primary policy at the appropriate charge, and a $7 credit allowed on the Secondary policy if the Primary policy number is shown on the Declarations page of the Secondary policy.

Office, Professional, Private School or Studio Occupancy

When the insured maintains an incidental office, professional, private school or studio occupancy on the premises, the additional premium shall be calculated by adding the appropriate charge from the following table to the premium developed for any required increased in the Coverage C Limit of Liability.

Submit to Company for Medical Payments charges on incidental day nurseries or nursery schools.

		Limit of Liability													
Coverage E	**$25,000**			**$50,000**			**$100,000**			**$200,000**			**$300,000**		
Coverage F	None	500	1000	None	500	1000	None	500	1000	None	500	1000	None	500	1000
Residence Premises															
General Rule 5.a.*	9	11	13	10	12	14	11	13	15	12	14	16	13	15	17
General Rule 5.b.*		3	4		4	5		5	6		6	7		7	8
General Rule 5.c.**	4	6	8	5	7	9	6	8	10	7	9	11	8	10	12
*Attach Endorsement **MH(F) 24** Office, Professional, Private School or Studio Use – Residence Premises.															
Attach Endorsement **MH(F) 25 Office, Professional, Private School or Studio Use – Other Residence.															

SECTION II COVERAGES – LIABILITY

Watercraft

Coverage must be written to expiration of the policy, but it is permissible to stipulate for inboard motor boats or inboard-outboard motor boats or sailboats (not outboard motors) the navigational period of each year. Premium shall be adjusted on a short rate basis. For boats not described below, coverage is not permitted under the Mobile Homeowners Policy. The premium applicable in the state in which the insured's initial residence premises is located shall apply except that if the insured owns another premises where he maintains a residence and operates his boat principally from such other premises, the premiums applicable in the state where the latter premises are located shall apply.

LIMIT OF LIABILITY										
Coverage E	**$25,000**		**$50,000**		**$100,000**		**$200,000**		**$300,000**	
Coverage F	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000
Outboard Motor*										
Less than 50 HP	5	6	6	7	7	8	8	9	9	10
50 HP and over	8	10	10	12	11	13	13	15	14	16
Inboard or Inboard-Outboard Motor Boats and Sailboats **										
• Under 16 MPH										
Less than 26 feet	11	12	13	14	15	16	17	18	19	20
26 to 40 feet	30	33	34	37	39	42	44	47	50	53
Over 40 feet	58	65	67	74	76	83	87	94	99	106
• 16 to 30 MPH										
Less than 26 feet	23	26	27	30	30	33	35	38	40	43
26 to 40 feet	47	53	54	60	61	67	70	76	80	86
Over 40 feet	87	98	100	111	114	125	131	142	149	160
• Over 30 MPH										
Less than 26 feet	58	65	67	74	76	83	87	94	99	106
26 to 40 feet	87	98	100	111	114	125	131	142	149	160
Sailboats No Auxiliary Power 26 to 40 feet	23	26	27	30	30	33	35	38	40	43
*Where two or more outboard motors are regularly used together in connection with any single watercraft owned by the Insured, the horsepower of all such outboards shall be accumulated for rating purposes.										
**Sailboats 26 to 40 feet inclusive equipped with Auxiliary Power are classed as Inboard Motor Boats.										
Attach Endorsement **MH(F) 36** Watercraft										

SECTION II COVERAGES – LIABILITY

Business Pursuits

Classify and apply charge separately for each person insured:

A - Clerical Office Employees - Defines as those employees whose duties are confined to keeping the books or records, conducting correspondence, or who are engaged wholly in office work where such books or records are kept or where such correspondence is conducted, having no other duty or any nature in or about the employer's premises. This classification applies only to persons who are employed exclusively in separate buildings or on separate floors of buildings or in departments on such floors which are separated from all other work places of the employer by structural partitions and within which no work is performed other than clerical office duties.

B - Salesmen, Collectors or Messengers - Including installation, demonstration or servicing operations.

C - Teachers - Athletic, laboratory, manual training, physical training and swimming instruction, excluding liability for corporal punishment of pupils.

D - Teachers - Not otherwise classified, excluding liability for corporal punishment of pupils.

E - Teachers - Liability for corporal punishment of pupils. Additional premium for this coverage must be added to premium for classification C or D.

Occupations not otherwise classified - Refer to Company.

Limit of Liability														
Coverage E	**$25,000**			**$50,000**			**$100,000**			**$200,000**			**$300,000**		
Coverage F	None	500	1000	None	500	1000	None	500	1000	None	500	1000	None	500	1000
Class															
A	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
B	2	3	4	2	3	4	3	4	5	3	4	5	3	4	5
C	3	5	6	3	6	7	4	7	8	5	8	9	6	9	10
D	1	2	3	1	2	3	1	2	3	2	3	4	2	3	4
E		2			3			4			5			6	
*Attach Endorsement **MH(F) 35** Business Pursuits															

SECTION II COVERAGES – LIABILITY

Farmers Comprehensive Personal Liability

Coverage must be written to expiration of the policy, but it is permissible to stipulate for inboard motor boats or inboard-outboard motor boats or sailboats (not outboard motors) the navigational period of each year. Premium shall be adjusted on a short rate basis. For boats not described below, coverage is not permitted under the Mobile Homeowners Policy. The premium applicable in the state in which the insured's initial residence premises is located shall apply except that if the insured owns another premises where he maintains a residence and operates his boat principally from such other premises, the premiums applicable in the state where the latter premises are located shall apply.

LIMIT OF LIABILITY										
Coverage E	**$25,000**		**$50,000**		**$100,000**		**$200,000**		**$300,000**	
Coverage F	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000
Initial Farm Premises	21	23	23	26	26	29	29	32	32	35
Each Additional Farm Premises Occupied or Rented	12	13	14	15	15	16	17	18	19	20
Total Acreage for All Locations Occupied or Rented Over 500	5		6		7		8		9	
Farm Employees*										
• Per 100 Days or Faction	6	7	7	8	8	9	9	10	10	11
• Each Farm Employee Part Time	8	9	9	10	10	11	11	13	12	14
• Each Farm Employee Full Time	18	20	20	22	22	25	25	28	28	31
Minimum Premium Per Policy	11	13	13	15	14	17	16	19	18	21
Animal Collision Coverage G	$300 Limit - $3									
Attach Endorsement **MH(F) 41** Farmer's Comprehensive Personal Liability										

Owned Snowmobile

Each snowmobile owned by the Named Insured or any other Insured who is a resident of the Named Insured's household must be declared. The premium charge shall apply separately to each snowmobile. The minimum charge for each snowmobile for any period of coverage within a policy year shall be as indicated below for the respective Limits of Liability.

LIMIT OF LIABILITY										
Coverage E	**$25,000**		**$50,000**		**$100,000**		**$200,000**		**$300,000**	
Coverage F	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000
Each Snowmobile	-	-	-	-	-	-	-	-	-	-
Annual Minimum Premium	34	35	39	40	42	44	48	50	54	55
Attach Endorsement **MH(F) 37** Snowmobile										

1. **TERRITORY ASSIGNMENTS**

   If a territory shown is defined in terms of United States Postal Service (USPS) ZIP code:

   A. Determine the applicable rating territory based on the location of the dwelling.

   B. An insured's rates shall not be changed solely because the USPS changed his or her ZIP code and the physical boundaries of a rating territory shall be determined by the ZIP code boundaries in effect at the time of the latest rate filing defining the territory. Territory boundaries in North Carolina are concurrent with USPS ZIP code boundaries in effect as of **July 1, 2013.** If the USPS introduces a new ZIP code or realigns a ZIP code boundary after **July 1, 2013,** the new ZIP code may not yet be listed in Rule **2.C.** If this is the case, assign the rating territory based on the ZIP code boundary that formerly applied to the dwelling before the USPS changed the ZIP code.

2. **TERRITORY DEFINITIONS** – (For all Coverages and Perils Other than Earthquake).

   Assign the applicable territory using the following order of priority:

A.

County of	Code
Alamance	310
Alexander	340
Alleghany	360
Anson	300
Ashe	360
Avery	370
Beaufort	150
Bertie	180
Bladen	230
Buncombe	360
Burke	360
Cabarrus	320
Caldwell	360
Camden	150
Caswell	310
Catawba	360
Chatham	280
Cherokee	390
Chowan	150
Clay	390
Cleveland	350
Columbus	200
Craven	150
Cumberland	220
Currituck (other than Beach Areas)	130
Dare (other than Beach Areas)	130
Davidson	320
Davie	310
Duplin	190
Durham	270
Edgecombe	210
Forsyth	310
Franklin	240
Gaston	350
Gates	170

County of	Code
Graham	390
Granville	260
Greene	180
Guilford	310
Halifax	240
Harnett	250
Haywood	380
Henderson	360
Hertford	170
Hoke	250
Hyde (other than Beach Areas)	130
Iredell	340
Jackson	390
Johnston	240
Jones	150
Lee	290
Lenoir	190
Lincoln	350
Macon	390
Madison	380
Martin	180
McDowell	360
Mecklenburg	340
Mitchell	370
Montgomery	300
Moore	290
Nash	240
Northampton	240
Orange	280
Pamlico	130
Pasquotank	150
Perquimans	150
Person	260
Pitt	180
Polk	360
Randolph	320
Richmond	300
Robeson	230
Rockingham	310
Rowan	320
Rutherford	350
Sampson	220
Scotland	250
Stanly	340
Stokes	310
Surry	310
Swain	380
Transylvania	380
Tyrrell	150
Union	340
Vance	260
Wake	270
Warren	260
Washington	150
Watauga	360
Wayne	180
Wilkes	340
Wilson	210
Yadkin	330
Yancey	360

B. Beach Areas

Beach Area – Localities south and east of the Inland Waterway from the South Carolina Line to Fort Macon (Beaufort Inlet), thence south and east of Core, Pamlico, Roanoke and Currituck Sounds to the Virginia Line, being those portions of land generally known as the "Outer Banks".

Beach areas in Currituck, Dare, and Hyde Counties: 110

Beach areas in Brunswick, Carteret, New Hanover, Onslow, and Pender Counties: 120

C. Other than Beach Areas of Brunswick, Carteret, New Hanover, Onslow, and Pender Counties

For areas of Brunswick, Carteret, New Hanover, Onslow and Pender Counties, other than the Beach Areas, refer to the following ZIP codes. If portions of these ZIP codes fall in Counties other than Brunswick, Carteret, New Hanover, Onslow and Pender Counties use the territory code for those Counties.

1. Eastern Coastal Territory

ZIP Code	USPS ZIP Code Name	Code
28403	Wilmington	140
28404	Wilmington	140
28405	Wilmington	140
28406	Wilmington	140
28407	Wilmington	140
28408	Wilmington	140
28409	Wilmington	140
28410	Wilmington	140
28411	Wilmington	140
28412	Wilmington	140
28422	Bolivia	140
28428	Carolina Beach	140
28443	Hampstead	140
28445	Holly Ridge	140
28459	Shallotte	140
28460	Sneads Ferry	140
28461	Southport	140
28462	Supply	140
28467	Calabash	140
28468	Sunset Beach	140
28469	Ocean Isle Beach	140
28470	Shallotte	140
28480	Wrightsville Beach	140
28511	Atlantic	140
28516	Beaufort	140
28520	Cedar Island	140
28524	Davis	140
28528	Gloucester	140

ZIP Code	USPS ZIP Code Name	Code
28531	Harkers Island	140
28532	Havelock	140
28533	Cherry Point	140
28539	Hubert	140
28553	Marshallberg	140
28557	Morehead City	140
28570	Newport	140
28577	Sealevel	140
28579	Smyrna	140
28581	Stacy	140
28584	Swansboro	140
28589	Williston	140

2. Western Coastal Territory

ZIP Code	USPS ZIP Code Name	Code
28401	Wilmington	160
28402	Wilmington	160
28420	Ash	160
28421	Atkinson	160
28425	Burgaw	160
28429	Castle Hayne	160
28435	Currie	160
28436	Delco	160
28447	Ivanhoe	160
28448	Kelly	160
28451	Leland	160
28452	Longwood	160
28454	Maple Hill	160
28456	Riegelwood	160
28457	Rocky Point	160
28466	Wallace	160
28478	Willard	160
28479	Winnabow	160
28518	Beulaville	160
28521	Chinquapin	160
28540	Jacksonville	160
28541	Jacksonville	160
28542	Camp Lejeune	160
28543	Tarawa Terrace	160
28544	Midway Park	160
28545	McCutcheon Field	160
28546	Jacksonville	160
28547	Camp Lejeune	160
28555	Maysville	160
28574	Richlands	160
28582	Stella	160

North Carolina
Mobile Homeowners MH(F) and MH(C)
Territories and Territory Groups Effective June 1, 2020
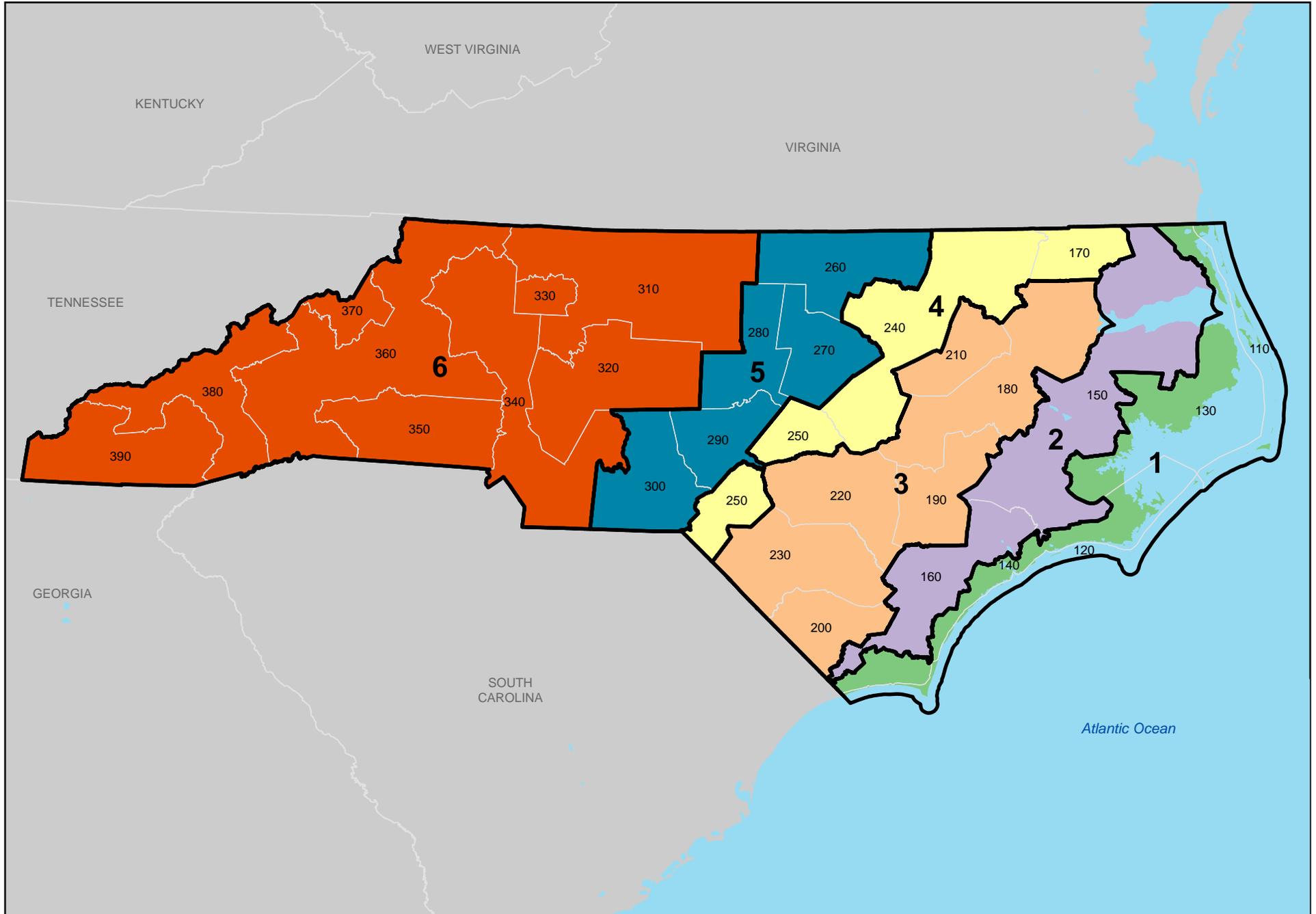
PRE-FILED TESTIMONY
OF
JOANNA BILIOURIS

APRIL 2024

2024 NORTH CAROLINA MOBILE HOMEOWNERS MH(F) INSURANCE RATE FILING BY THE NORTH CAROLINA RATE BUREAU

Q. Would you state your full name and business address?

A. My name is Joanna Biliouris. My business address is 2910 Sumner Blvd, Raleigh, North Carolina 27616.

Q. Are you employed by the North Carolina Rate Bureau ("Bureau")?

A. Yes.

Q. In what capacity?

A. I am the General Manager.

Q. What is the Bureau's function with respect to rates for "Mobile Homeowners MH(F) insurance?

A. The Bureau promulgates rates and rules for residential property insurance in North Carolina, including this MH(F) program.

Q. Can you identify Exhibits RB-1 through RB-23?

A. Yes. Exhibit RB-1 sets forth the revised rates for the MH(F) market in North Carolina, as well as the data and calculations underlying those rates and the MH(F)rate manual changes that accompany the filed rate changes.   RB-1 also includes the supplemental data and exhibits required by statute and by regulation for this filing. Exhibit RB-2 is the current MH(F) rate manual. Exhibits RB-3 through RB-23 contain the required accompanying pre-filed testimony and exhibits.   Together, these materials constitute a filing (the "Filing") that is dated April 8, 2024, submitted by the Bureau to the Honorable Mike Causey, Commissioner of Insurance, with respect to MH(F) rates in North Carolina.

Q. Do you know how the expense data underlying the Filing were compiled?

A. Yes. The underwriting expense provisions included in the Filing were derived from the results of a special call for expense experience that is issued on an annual basis to all member companies of the Bureau. The responses received from that special call were compiled, reviewed, and furnished to Milliman for incorporation into the

Filing. The Bureau also furnished to Milliman the information appearing in the Annual Statements and the Insurance Expense Exhibits of Bureau member companies, which are filed by those companies with the Department of Insurance ("DOI") and are part of the DOI's official records.

Q. Was the information you described above, which was furnished to Milliman and utilized in the Filing, correct and accurate to the best of your knowledge, information and belief?

A. Yes.

Q. Can you identify the document (Exhibit RB-2) entitled the North Carolina Mobile Homeowners Policy MH(F) Program?

A. Yes. The North Carolina Mobile Homeowners Policy Program is a manual of the rules, rates and classifications used to write Mobile Homeowners insurance in North Carolina. This manual and any approved amendments are on file with the North Carolina Department of Insurance and a copy is maintained at the offices of the Bureau.

Q. Do you know how the exposure and loss experience data underlying the Filing were compiled?

A. Yes. The exposure and loss experience data included in the Filing were derived from the results of a special call for experience that was issued to all companies writing MH(F) insurance. Milliman conducted that call on behalf of the Rate Bureau and incorporated that data into the filing.

Q. To the extent that actuarial expertise was necessary in the preparation of this Filing, where did the Bureau obtain that expertise?

A. Actuarial expertise was obtained from Milliman. Milliman is retained by the Bureau to provide actuarial services for, among numerous other tasks, preparation of this Filing. Many of the individual company representatives serving on the Bureau's Mobile Home and Property Rating Subcommittees are also actuaries. The Bureau's Subcommittees reviewed the data underlying the Filing and made recommendations to the Property Committee, which then made recommendations to the Bureau's Governing Committee as to the items contained in the Filing. In addition, the Bureau has an actuary on its staff who assisted in the review and the preparation of the Filing.

Q. What is the proposed effective date of the rates in the Filing?

A. The rate review proposes that the indicated rate changes be implemented in three phases over a three-year period. The Bureau proposes that the new rates for Year 1 apply to all policies becoming effective on or after November 1, 2024, the new rates for Year 2 apply to all policies becoming effective on or after November 1, 2025, and the new rates for Year 3 apply to all policies becoming effective on or after November 1, 2026.

Q. **Does the Filing submitted to the Commissioner include, to the extent available, the information to be furnished in connection with filings under Article 36 of Chapter 58 of the General Statutes?**

A. Yes. Those data that were available have been submitted to the Commissioner as part of the Filing. As shown and explained in that submission, some data were not collected or, if collected, were not retrievable in the form requested. The individual circumstances with respect to such data are explained in the submission.

Q. **Does that conclude your pre-filed testimony?**

A. Yes.

**PREFILED TESTIMONY
OF
PAUL D. ANDERSON**

**2024 MOBILE HOMEOWNERS MH(F) INSURANCE RATE FILING
BY THE NORTH CAROLINA RATE BUREAU**

Q.   Please state your name and business address.

A.   My name is Paul D. Anderson. My business address is 17335 Golf Parkway, Brookfield, WI 53045.

Q.   By whom are you employed?

A.   I am employed by Milliman, Inc. (Milliman) and have been employed by Milliman since February 1, 2007.

Q.   What is your educational background?

A.   I received a Bachelor of Science in Actuarial Science from Drake University in Des Moines, Iowa in 1993.

Q.   Do you have any additional certifications or qualifications?

A.   Yes. I have been a Fellow of the Casualty Actuarial Society (CAS) since 2002 and a Certified Specialist in Predictive Analytics of the CAS Institute (iCAS) since 2018. Since 2002, I have served on several committees of the Casualty Actuarial Society, including the following:

- Syllabus & Examination Committee: April 2004 to July 2006;
- Volunteer Support Task Force: February 2012 to April 2013;
- Volunteer Resources Committee: April 2013 to March 2020;
- Vehicle Technology & Impact on Loss Trends Planning Committee: October 2017 to August 2018;
- Participation Survey Task Force: January 2018 to January 2019;
- Crash Course in Vehicle Technology & Driverless Cars Committee (chairperson): February 2020 to November 2021;
- Volunteer Resources Advisory Committee: June 2020 to November 2021;
- Crash Course Seminar Task Force (volunteer chairperson): November 2021 to Present; and
- Volunteer Resources Task Force: November 2021 to Present.

I have also been a member of the American Academy of Actuaries since 2002 and meet all of the continuing education requirements of that organization as well as those of the Casualty Actuarial Society.

Q.   What is your employment background?

A.   I was employed by Allstate Insurance Company from June 1993 until January 2007. While at Allstate, I held various actuarial roles. I began my career as an Auto Pricing Analyst, and over time, I assumed increasing responsibility in various departments that included Property Pricing, Auto Pricing, Property Research, and Auto Research. On the pricing teams, I assisted in developing rates for property and auto insurance products in most states across the country. On the research teams, I assisted in developing new property and auto risk classification plans to be implemented by Allstate's pricing teams. From 2006 until January 2007, I served as a Senior Manager for Allstate's Eastern region, which included assisting in the oversight of the pricing strategies for approximately half the country, including North Carolina.

In February 2007 I began my career at Milliman. Since 2007, I have completed, managed, or overseen numerous property and auto pricing analyses for a variety of clients. My clients have included small single-state insurance companies, industry-leading national insurance companies, start-up insurtech insurance companies, government entities, the North Carolina Rate Bureau, and other entities with similar coastal property exposure in states such as Florida, Hawaii, and Texas. These client assignments have included such projects as pricing analyses to evaluate overall rate adequacy, predictive modeling assignments to develop new risk classification plans, and analyses of catastrophe losses to evaluate the adequacy and allocation of property premiums corresponding to catastrophe risk.

Q.   What is Milliman?

A.   Milliman is among the world's largest providers of actuarial, risk management, and related technology and data solutions. Milliman was founded in Seattle in 1947 as Milliman & Robertson and today has offices in principal cities worldwide, covering markets in North America, Latin America, Europe, Asia and the Pacific, the Middle East, and Africa. Milliman employs more than 4,800 people, including actuaries and specialists ranging from clinicians to economists. The firm has consulting practices in employee benefits, financial services, healthcare, life insurance, and property and casualty insurance. Milliman serves the full spectrum of business, education, financial, governmental, union, and nonprofit organizations.

Q.   What are your current responsibilities at Milliman?

A.   I am responsible for managing and overseeing the personal lines and insurance-related predictive analytics portion of Milliman's Milwaukee Casualty practice. The personal lines and predictive analytics team conducts a variety of property and auto pricing, product development, and predictive modeling assignments, primarily for insurance companies. Over the last five years, we have completed property analyses for nearly every state in the country, including North Carolina.

Q. **Were you engaged to provide actuarial services to the North Carolina Rate Bureau (the Rate Bureau or Bureau) in relation to its 2024 mobile homeowners MH(F) rate filing?**

A. Yes, I was.

Q. **What work did Milliman perform in connection with the rate review and this rate filing?**

A. Milliman was engaged to provide actuarial ratemaking services directly to the Rate Bureau to assist in the preparation of the 2024 mobile homeowners MH(F) rate review. As such, I was involved in several aspects of the preparation of this filing.

First, under the direction and administration of the Rate Bureau, Milliman developed a Mobile Homeowners Data Call. In response to this data call, Milliman received data from Bureau member companies that write mobile homeowners insurance in North Carolina. Milliman compiled the data and reviewed the data for reasonability and consistency. In addition to data from the data call, Milliman received and evaluated expense-related data that the Rate Bureau collected from its member companies. During the course of our analysis for this filing, Milliman also received modeled hurricane data, compensation for assessment risk data, and net cost of reinsurance data from Aon. Milliman aggregated all of this data and reviewed each component and the aggregate for reasonability.

Second, I and other Milliman staff under my direction compiled the ratemaking data and, along with the Rate Bureau's other consultants, completed a rate review to be reviewed by the Rate Bureau's Mobile Home Subcommittee, Property Rating Subcommittee, Property Committee, and Governing Committee in preparation for this rate filing.

Third, Milliman staff under my direction assembled the majority of the data and performed all of the calculations contained in Exhibits RB-1 and RB-7. This work was performed under the ultimate direction of the Rate Bureau committees.

Finally, I reviewed the filed rates to determine whether they are calculated in accordance with applicable actuarial standards and reasonable actuarial methodologies. In conducting this review and making this determination, I adhered to the American Academy of Actuaries' *Code of Professional Conduct.* Based on the guidance of Precept 3 in the *Code of Professional Conduct*, which states that actuarial services shall satisfy applicable standards of practice, I conducted my review in accordance with all Actuarial Standards of Practice (ASOPs) that relate to this filing. A few examples of the ASOPs that I applied during my review include ASOP No. 13, *Trending Procedures in Property/Casualty Insurance*; ASOP No. 29, *Expense Provisions in Property/Casualty Insurance Ratemaking*; ASOP No. 39, *Treatment of Catastrophe Losses in Property/Casualty Insurance Ratemaking*;

and ASOP No. 53, *Estimating Future Costs for Prospective Property/Casualty Risk Transfer and Risk Retention.*

I also conducted my review in accordance with ASOP No. 17, *Expert Testimony by Actuaries.* In addition, I applied the rate standards set forth in the North Carolina General Statutes, including G.S. 58-36-10, which provides that rates must not be excessive, inadequate, or unfairly discriminatory and that certain statutory rating factors must be considered.

Q.   Is your firm being compensated for this engagement?

A.   Yes, it is.

Q.   Is that compensation in any way contingent on the provision of favorable testimony in support of this filing?

A.   No, it is not.

Q.   Were there any constraints placed on your analysis, such as limited or delayed access to data or limited time, that may have hindered your complete analysis?

A.   No, I was provided all the data and information necessary for my work, and I had adequate time for a complete analysis. My analysis was not limited in any way.

Q.   What is the source of the data evaluated in Exhibit RB-1?

A.   The ratemaking data reflected in Exhibit RB-1 was, in general, supplied by the individual insurance companies that write mobile homeowners insurance policies in North Carolina on the MH(F) policy form. Those companies submitted their data in response to the mobile homeowners data call described above. Data received in response to the data call included the following:
- Premium data – 7 years of policy-level data with rating characteristics needed to calculate mobile homeowners premium;
- Claims data – 7 years of claims-level data, including cause of loss;
- Summarized loss data – at least 15 years of summarized losses for non-hurricane wind, hurricane, flood, and all (non-liability) perils combined; and
- Loss development data – 12 years of summarized loss and claim data by accident year evaluated at successive evaluation dates.

After receiving the data from the individual insurance companies, Milliman reviewed and verified each company's data and then consolidated the data for use in the rate review analysis.

The individual insurance companies that write mobile homeowners policies in North Carolina on the MH(F) policy form also submitted expense-related data to

the North Carolina Rate Bureau. The Rate Bureau reviewed the expense data for reasonability and aggregated the data before providing it to Milliman for final review and consolidation.

During the rate review analysis, Milliman also received modeled hurricane losses, compensation for assessment risk data, and net cost of reinsurance data from Aon. After receiving the data from Aon, Milliman reviewed the modeled hurricane losses, the results of the compensation for assessment risk analysis, and reinsurance costs for reasonability.

After consolidating the data from the member companies, the Rate Bureau, and Aon, Milliman produced various exhibits of the combined data in a format and detail necessary for review by the Rate Bureau committees and ultimately for use in this rate filing.

Q. **What exposure and loss experience data supporting this filing are contained in Exhibit RB-1?**

A. In general, the supporting data for the indicated and proposed rate changes are contained in Sections C and D. The most recent five years of loss experience are summarized and displayed in Section C. The experience used in this filing includes accident year experience for the years ending December 31, 2018 through December 31, 2022. To clarify what is meant by "accident year," the losses for the accident year ending December 31, 2022 include all losses resulting from claims caused by events that occurred between January 1, 2022 and December 31, 2022, even if the loss was paid or a reserve established on or after January 1, 2023.

Similar to Section C, the information underlying Section D is also based on accident year experience for the years 2018 through 2022. That information supports changes to the wind exclusion credits, which are one of the mobile homeowners rating variables.

Q. **Why are five years of loss experience used to determine the indicated rate changes?**

A. The objective of ratemaking is to establish rates that are sufficient to cover all expected losses and expenses and to provide a reasonable margin for profit. Rates are prospective and, as such, are developed for the time period during which they will be in effect. The rate review underlying this filing was performed with the assumption that the effective date would be October 1, 2024, and that the proposed rates would be in effect for one year beginning from that date. However, based on the submission date of this filing, and in order to mitigate the effect of the rate increase on policyholders, the Rate Bureau Governing Committee elected to spread the proposed rate change over three years, with a proposed effective date of November 1, 2024 for the year 1 change, an effective date of November 1, 2025

for the year 2 change, and an effective date of November 1, 2026 for the year 3 change.

Historical loss experience is evaluated for the purpose of projecting expected future losses. For insured losses, including flood losses, but not including hurricane losses (for which hurricane models are used) and not including non-hurricane catastrophic wind losses and flood losses (for which a separate excess wind procedure and a separate excess flood procedure, respectively, are applied), five years of data are considered to be reasonable and appropriate. Using five years of loss experience to evaluate non-catastrophic types of losses balances the overall stability of the rates with the responsiveness of the rates to current market conditions. Additionally, North Carolina statutes allow the Rate Bureau to review five years of experience in its rate filings in addition to other factors that are to be considered. Note that, for the purposes of this filing, "hurricane losses" include wind and storm surge losses from hurricanes.

Previous North Carolina mobile homeowners rate filings submitted by the Rate Bureau have relied on five years of experience with weights of 10%, 15%, 20%, 25%, and 30% applied to each year respectively as a way to balance stability and responsiveness of the proposed rates. In this filing, we use those same weights for the MH(F) Owners policy forms, but for MH(F) Tenants, as we did in the 2022 filing, we apply equal weight (i.e., 20%) to each year due to the low volume of business in this segment and potential variability by year. The use of equal weights or weights skewed to the most recent years of experience are frequently used methodologies and are generally accepted in all jurisdictions within the United States.

Q.   What is the overall indicated and proposed change in mobile homeowners MH(F) rates in this filing?

A.   This filing shows the indicated need for an overall 82.9% statewide average rate increase for mobile homeowners MH(F) policies. This includes an indicated 83.0% change to Owners rates and an indicated 61.5% change to Tenants rates.

Based on these indicated rate changes, the Rate Bureau's Governing Committee decided to implement the indicated rates over a three-year period. Section A, Page 1 shows the proposed statewide rate changes for each MH(F) policy form separately for years 1, 2, and 3. The proposed rate changes were selected so that the annual rate change within a territory group for either policy form was 49.0% or less, and so that the overall annual rate change for any policy form was less than 25.0%. Due to proposed rate changes by territory group and by policy form that vary slightly across the three years, the overall proposed rate changes across all territory groups and all policy forms will also vary slightly.

As a result of this implementation approach, this filing proposes an overall 24.9% statewide average rate increase in year 1, an overall 21.2% statewide average rate

increase in year 2, and an overall 20.9% statewide average rate increase in year 3. Allocating those rate changes by policy form, the year 1 rate change includes a proposed 24.9% change to Owners rates and a proposed 24.8% change to Tenants rates. The year 2 rate change includes a proposed 21.2% change to Owners rates and a proposed 13.9% change to Tenants rates. Lastly, the year 3 rate change includes a proposed 21.0% change to Owners rates and a proposed 13.6% change to Tenants rates.

Q. **Please describe the overall ratemaking methodology that underlies the filing.**

A. The approach in this filing is generally consistent with prior mobile homeowners MH(F) filings submitted by the Rate Bureau. Consistent with ASOP No. 53, *Estimating Future Costs for Prospective Property/Casualty Risk Transfer and Risk Retention* as published by the Actuarial Standards Board, the indicated rates reflect the expected costs associated with insuring mobile homeowners MH(F) policies. These expected future costs include claims, claim settlement expenses, operational and administrative expenses, and a fair and reasonable profit.

The statewide rate indications for mobile homeowners MH(F) policies are developed based on a loss cost methodology (instead of a loss ratio methodology). The indicated rate change is calculated for each policy form (i.e., Owners and Tenants) by comparing the required base rate per policy to the current base rate. This comparison of the required and current base rates is consistent with ASOP No. 53 referenced above, is commonly used throughout the industry, and is an actuarially sound method of developing an indicated rate-level change.

Q. **Are there any changes in the ratemaking methodology compared to prior filings?**

A. The 2024 mobile homeowners MH(F) filing is generally consistent with prior filings, but there are a couple components of this filing that rely on different approaches as compared to the 2022 mobile homeowners MH(F) filing.

First, in our review of the expense data supporting this filing, we noted that one of the member companies transferred its mobile homeowners MH(F) policies to the MH(C) policy form during 2022. As a result, in order to determine expense provisions that accurately reflect the expected future expenses based on the distribution of member companies, we restated historical expense data to reflect the member companies currently writing MH(F) policies. In prior filings, we used the expense data as it was received from the Rate Bureau, and we did not restate historical expense data.

Second, in this filing, the Rate Bureau determined the compensation for assessment risk provision in a different manner than in the 2022 mobile homeowners MH(F) filing. In prior filings, the Rate Bureau retained Milliman to develop the compensation for assessment risk provision. Due to the lack of

availability of the detailed data required for the 2022 filing, Milliman relied on data from prior Rate Bureau property rate filings to determine the provision for the 2022 filing. With this filing, Aon confirmed that they had access to the necessary detailed data and, as such, the Rate Bureau retained Aon to develop the compensation for assessment risk provision. Aon used simulated event-level hurricane losses based on the most recent exposure year and replicated the methodology used by Milliman in the 2018 mobile homeowners MH(F) filing. To reflect that some insurance companies no longer retain exposure to assessments from the Beach and FAIR Plans pursuant to the companies' respective reinsurance agreements, Aon then modified the calculated compensation for assessment risk provision by multiplying it by 50%.

This approach, though a change from the 2022 mobile homeowners MH(F) filing, was used by the Rate Bureau in its dwelling insurance rate filing submitted in July, 2023, and its homeowners insurance rate filing submitted in January, 2024.

Both of the changes in ratemaking methodology identified above are reasonable, actuarially sound, and have minimal impact on the rate-level indications.

Q.   Looking at Section C, page 1, what is shown on this exhibit?

A.   Section C, page 1 shows the statewide indicated rate changes for the policy forms offered in the North Carolina mobile homeowners MH(F) program. The data shown on this page reflects all MH(F) business written in the state. The MH(F) program consists of three policy forms: MH(F)-2 (i.e., Broad Form) and MH(F)-3 (i.e., Comprehensive Form) are collectively referred to as Owners, and MH(F)-4 (i.e., Contents Broad Form) is referred to as Tenants. Overall, the perils insured against by MH(F) policies are similar to those insured against under homeowners policies except that MH(F) policies also provide coverage for losses caused by the flood peril.

Q.   Referring to row 1 on page 1 of Section C, what is the *total base class loss cost*?

A.   The *total base class loss cost* is the average amount of projected loss per exposure, including both non-hurricane and hurricane losses, for the risk identified as the base class for each respective MH(F) policy form. The calculations underlying the *total base class loss cost* for each policy form are included later in the discussion of Section C, pages 2 and 4.

Q.   Please explain each of the items shown in row 2 of Section C, page 1, including the *fixed expense per policy*, *variable expense per policy*, *profit*, *contingencies*, and *policyholder dividends*.

A.   Row 2a shows the *fixed expense per policy* for each MH(F) policy form. These amounts reflect the average costs for general expenses and other acquisition

expenses that were expected, for purposes of the rate review, to be paid to service policies written between October 1, 2024 and September 30, 2025. General expenses include overhead expenses such as equipment, rent, and salaries. Other acquisition expenses include costs required to issue a policy, excluding commission and brokerage and including such items as advertising fees, postage, and telephone charges. General expenses and other acquisition expenses are fixed expenses in that they do not vary directly in proportion to the amount of premium charged or collected. As a result, the amounts shown in row 2a (e.g., $60.33 for Owners) are applicable to each mobile homeowners policy written under each respective MH(F) policy form.

The *fixed expense per policy* for each policy form is calculated on page 45 of Section C and further supported by data found on pages 44 and 46 of Section C. We began by evaluating historical expense information provided by the Rate Bureau and calculating the ratio of general expenses and other acquisition expenses to earned premium for each year from 2018 through 2022. In our review of the expense data, we noted that one of the member companies transferred its mobile homeowners MH(F) policies to the MH(C) policy form during 2022. As a result, in order to determine expense provisions that accurately reflect the expected future expenses based on the distribution of companies, we restated historical data to reflect the member companies currently writing MH(F) policies. Although we considered the same five years of experience as used in the overall rate indications, the selected expense ratios were based on the most recent three years in order to best reflect any recent shifts in the expense ratios. The selected general expense ratio is 3.6% and the selected other acquisition expense ratio is 7.5%, resulting in a total fixed expense ratio of 11.1%. Because these selections were based on the average expense ratios from 2020 through 2022, the selected 11.1% fixed expense ratio corresponds to the fixed expenses observed at the midpoint of that experience period, or July 1, 2021.

Row 2b shows the *variable expense per policy* for each MH(F) policy form. Unlike fixed expenses, variable expenses vary directly in proportion to the amount of premium charged or collected. As a result, the variable expenses are included in the indicated rate change calculations as percentages relative to the written premium rather than dollar amounts. The variable expense percentage for each MH(F) policy form includes a provision for commission and brokerage and a provision for premium taxes, licenses, and fees. These provisions are supported by data found on page 46 of Section C. Similar to our analysis of the fixed expenses, we evaluated historical expense information and calculated the ratio of commission and brokerage expenses and taxes, licenses, and fees to written premium for each year from 2018 through 2022. As noted above in the discussion of fixed expenses, the historical variable expense data was also restated to reflect the member companies currently writing MH(F) policies. We considered the same five years of experience as used in the overall rate indications; however, the selected expense ratios were based on the most recent three years in order to best reflect any recent shifts in the expense ratios. The selected commission and

brokerage expense ratio is 17.8% and the selected taxes, licenses, and fees expense ratio is 2.9%, resulting in a total variable expense ratio of 20.7%.

Similar to the variable expense ratio, rows 2c, 2d, and 2e contain three additional provisions that vary directly in proportion to the written premium. Row 2c includes a provision for *profit*, row 2d contains a provision for *contingencies*, and row 2e contains a provision for *policyholder dividends*. Each of these selected provisions is a consistent percentage across the various MH(F) policy forms.

- The underwriting profit provision used in this filing is 6.5%. This provision was selected by the Rate Bureau based on an analysis completed by Dr. Zanjani.

- The selected contingency provision in this filing is 1.0%, which is consistent with the prior mobile homeowners MH(F) filing and other Rate Bureau property insurance filings.

- The provision for policyholder dividends is supported by data on page 48 of Section C. To determine the provision for policyholder dividends, we evaluated historical annual statement information for companies writing Homeowners Multiple Peril premium in North Carolina. (Similar information specific to mobile homeowners insurance is not available.) We calculated the ratio of total dividends to total written premium for homeowners for each year from 2018 through 2022 and observed that companies consistently paid dividends to policyholders during that time period. Because of the consistency of these dividends during the historical experience, the Rate Bureau concluded that a provision for expected policyholder dividends is appropriate and, as such, selected a provision of 0.5% in this filing.

Q.   In your opinion, are the provisions for general expenses and for other acquisition expenses reasonable?

A.   Yes, the general expenses provision and the other acquisition expenses provision are reasonable. It is common practice in the industry to rely on historical experience and to calculate a three-year average expense ratio to determine provisions for general expenses and for other acquisition expenses.

Q.   In your opinion, are the provisions for commission and brokerage and for taxes, licenses, and fees reasonable?

A.   Yes, the commission and brokerage provision and the taxes, licenses, and fees provision are reasonable. It is common practice in the industry to rely on historical experience and to calculate a three-year average expense ratio to determine provisions for commission and brokerage and for taxes, licenses, and fees.

Q.   Is the provision for contingencies included in this filing reasonable?

A.   Yes, the selected 1.0% provision for contingencies is reasonable to include in this filing. In addition to being consistent with prior Rate Bureau mobile homeowners MH(F) filings, the use of a contingency provision is common within the property and casualty insurance industry. According to *Actuarial Standard of Practice No. 30: Treatment of Profit and Contingency Provisions and the Cost of Capital in Property/Casualty Insurance Ratemaking,* "the actuary should include a contingency provision if the assumptions used in the ratemaking process produce cost estimates that are not expected to equal average actual costs, and if this difference cannot be eliminated by changes in other components of the ratemaking process." There are several reasons why expected cost estimates may not be equal to actual costs. Some of these reasons include adverse court decisions, extension of coverage for unforeseen or unintended exposures, regulatory delay or reduction in filed rate changes, and unexpected large losses not sufficiently recognized in the normal ratemaking process. For these reasons, among others, a contingency provision is appropriate and necessary in my opinion.

Included with this filing as Exhibit RB-7 is an exhibit I prepared that summarizes the estimated impact of delays in the filing process within the State of North Carolina. The delay in obtaining rate changes, whether caused by the regulatory review process or other delays inherent in the filing process, is merely one of several items listed above that supports the use of a contingency provision in a rate-level indication. Exhibit RB-7 lists the 21 property rate filings submitted by the Rate Bureau between 2008 and 2022. For each filing, I compared the effective date assumed in the rate filing to the actual effective date. This difference, which reflects the delay due to the filing process, ranges from 0 months in the 2019 dwelling filing, to 22 months in the 2011 dwelling filing. After determining the length of delay for each filing, I applied the net trend (i.e., the loss trend offset by the premium trend) in that filing for the number of months of delay to determine the estimated impact of the delay in the filing process on the overall rate level. The estimated impact of delay varies across the 21 filings, ranging from -1.9% in the 2021 MH(C) mobile homeowners filing to +5.9% in the 2008 MH(C) mobile homeowners filing, with an average impact of +1.0%.

Based on prior filings submitted by the Rate Bureau, my experience with property filings submitted by insurance companies in other states, and the 1.0% estimated impact of delays in the North Carolina filing process, it is my opinion that a 1.0% contingency provision is reasonable, consistent with common actuarial practice, and appropriate based on fundamental actuarial principles. Again, the impact of delays in the filing process is only one of many reasons that justifies a contingency provision.

Q.   Is the provision for policyholder dividends included in this filing reasonable?

A.   Yes, as described above, the Rate Bureau evaluated five years of historical experience and selected a 0.5% provision for policyholder dividends based on a five-year average ratio of the total policyholder dividends issued by homeowners

insurers in North Carolina to the total direct written premium of those same companies.

The North Carolina ratemaking statutes (N.C. Gen. Stat. § 58-36-10(2)) require that policyholder dividends be considered in setting rates. Also, Actuarial Standard of Practice (ASOP) No. 29 regarding *Expense Provisions in Property/Casualty Insurance Ratemaking* states the following:

> The *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* of the Casualty Actuarial Society (CAS) classifies policyholder dividends as an expense to operations. When the actuary determines that policyholder dividends are a reasonably expected expense and are associated with the risk transfer, the actuary may include a provision in the rate for the expected amount of policyholder dividends. In making this determination, the actuary should consider the following: the company's dividend payment history, its current dividend policy or practice, whether dividends are related to loss experience, the capitalization of the company, and other considerations affecting the payment of dividends.

As stated in ASOP No. 29, policyholder dividends are classified as an operating expense. In addition to the above excerpt from the *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*, the Statement also provides that indicated rates should reflect the expected costs associated with insuring mobile homeowners policies, including all operating expenses. As such, since policyholder dividends are classified as an operating expense, it is consistent with the *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* and ASOP No. 29 to include a provision for policyholder dividends in the proposed rates reflected in this filing. Moreover, policyholder dividends are returns of premium to a company's policyholders and are not the same as dividends that publicly traded stock companies (owned by shareholders) pay to their shareholders. If dividends were not reflected in the Bureau's rates, the profit level in the filing would not be achieved because of dividends paid to policyholders.

By reviewing five years of historical experience to determine a provision for policyholder dividends, the Rate Bureau is complying with the statutes and ASOP No. 29 by considering the dividend payment history and ensuring that the selected provision is a reasonably expected expense.

Q. Referring to row 3 on page 1 of Section C, what is the *base rate excluding reinsurance cost*?

A.   The *base rate excluding reinsurance cost* is the average base rate for each policy form before reflecting additional adjustments for the compensation for assessment risk, the net cost of reinsurance, and net deviations. The *base rate excluding reinsurance cost* is calculated based on the following formula:

$$\frac{\text{(total base class loss cost + fixed expense per policy)}}{\text{(1 − variable expense ratio − profit − contingencies − policyholder dividends)}}$$

Q. **Please explain the item shown in row 4 of Section C, page 1, identified as the** *compensation for assessment risk per policy***.**

A. There is considerable risk to primary insurers (i.e., the member companies of the Rate Bureau for whom rates are being made in this filing) as a result of the exposures written in the North Carolina Insurance Underwriting Association (i.e., the Coastal Property Insurance Pool, or "Beach Plan") and the North Carolina Joint Underwriting Association (i.e., the FAIR Plan). Together, the Beach Plan and FAIR Plan serve as the "residual market" for residential property insurance in North Carolina. These two entities provide property insurance when policyholders are unable to purchase insurance coverage from companies in the voluntary market. In states with significant exposure to catastrophic events, property insurance residual markets may grow to represent a sizable portion of the total insured risk in the exposed regions of the state. In North Carolina, the Beach Plan has become the predominant writer of homeowners and dwelling insurance in the 18 coastal counties that it covers.

The Beach and FAIR Plans use the premiums collected from policies they issue to fund the losses and expenses attributable to the coverages they insure. When premiums are greater than losses and expenses during a fiscal year, the Beach and FAIR Plans accumulate surplus. That surplus is available to pay losses in the event that future losses and expenses exceed collected premiums plus investment income. However, if the surplus (and any applicable reinsurance) of either the Beach Plan or FAIR Plan is exhausted, then additional losses are passed through to property insurers in North Carolina in the form of an assessment. The potential overall industry assessment from the Beach Plan is limited to $1 billion per year, but the potential assessment from the FAIR Plan is unlimited. If losses in the Beach Plan exceed its retained surplus, the $1 billion industry assessment, and any other resources of the Beach Plan (including applicable reinsurance), any additional losses are passed through directly to residential property insurance policyholders in North Carolina in the form of a catastrophe recovery charge of up to 10% of premium per year.

This risk of potential assessments by the Beach Plan and FAIR Plan on property insurers in North Carolina requires that insurance companies be compensated for the additional risk to their capital. To quantify this risk, the Rate Bureau includes a compensation for assessment risk provision in the mobile homeowners MH(F) rates.

Q. **What is the source of the amounts shown in row 4 of Section C, page 1, labeled as the** *compensation for assessment risk per policy***?**

A.   The source of the compensation for assessment risk for each MH(F) policy form is an analysis completed for the Rate Bureau by Aon. It is my understanding that Aon was retained by the Rate Bureau based on their ability to access the necessary detailed data to develop the compensation for assessment risk provision. This is consistent with the most recent dwelling insurance and homeowners insurance rate filings submitted by the Rate Bureau.

In Aon's analysis, they used simulated event-level hurricane losses based on the most recent exposure year and replicated the methodology used by Milliman in the 2018 mobile homeowners MH(F) filing. To reflect that some insurance companies no longer retain exposure to assessments from the Beach and FAIR Plans pursuant to the companies' respective reinsurance agreements, Aon then modified the calculated compensation for assessment risk provision by multiplying it by 50%. More details of Aon's analysis are included in Ms. Mao's testimony and exhibits.

To determine the *compensation for assessment risk per policy* found in row 4 of Section C, page 1, the compensation for assessment risk provision is first adjusted for expenses by dividing by 100% minus the sum of the commission and brokerage expense ratio and the taxes, licenses, and fees expense ratio. The adjusted compensation for assessment risk provision is then multiplied by the average current base premium for each policy form. These calculations can be found on page 49 of Section C. To develop territory level provisions per policy, a similar calculation (multiplying the adjusted compensation for assessment risk provision by the average current base rate) is done for each territory group.

Q.   In your opinion, is it appropriate to include a provision for the compensation for assessment risk in mobile homeowners rates in North Carolina?

A.   Yes. Insurance companies writing mobile homeowners policies in North Carolina are exposed to the risk of Beach Plan or FAIR Plan assessments as a result of writing voluntary market property insurance in the state. As such, for those insurance companies that retain this exposure, they are entitled to receive fair compensation for bearing that risk and it is appropriate to include that compensation in the mobile homeowners rates. The current provision is based on a methodology developed by Milliman that has been used in prior Rate Bureau property rate filings and that relies on a widely accepted measure of compensation that will fairly compensate insurers for bearing this additional risk to their capital. Moreover, the North Carolina statutes (N.C. Gen. Stat. § 58-45-5(6c)) provide that prospective exposure to non-recoupable assessments shall be considered as an appropriate factor in the making of rates by the Rate Bureau.

Q.   What is the source of the amounts shown in row 5 of Section C, page 1, labeled as the *net cost of reinsurance per policy*?

A.   The source of the net cost of reinsurance for each MH(F) policy form is an analysis completed for the Rate Bureau by Aon. In addition to Aon's analysis to support the compensation for assessment risk (described above), Aon was also retained by the Rate Bureau based on their ability to access relevant data and experience from the reinsurance market, their expertise with catastrophe-related issues, and their prominence with respect to the reinsurance industry. This is consistent with other recent property rate filings submitted by the Rate Bureau.

In Aon's analysis, they used their experience and expertise as a reinsurance broker to develop layers of reinsurance coverage that are representative of typical amounts of reinsurance coverage purchased by the property insurance industry. Using data, catastrophe models, and other information available to Aon, they estimated the reinsurance premium associated with each layer of coverage, determined the expected losses within each layer, and calculated the net cost of reinsurance as the difference between the reinsurance premium and the expected losses in each layer. In this manner, Aon determined the expected net cost of reinsurance for the composite one company writing mobile homeowners insurance in North Carolina. These premium amounts, losses, and net costs of reinsurance were developed separately by peril and by territory for each MH(F) policy form so that they could be summarized appropriately to develop a statewide or territory indicated rate change. More details of Aon's analysis are included in Ms. Mao's testimony and exhibits.

To determine the *net cost of reinsurance per policy* found in row 5 of Section C, page 1, the total reinsurance cost for each MH(F) policy form is first divided by the corresponding number of 2022 earned house years. The resulting average reinsurance cost is further adjusted by dividing by the 2022 average rating factor, the 2022 premium trend factor, and the expected loss and fixed expense ratio. These calculations can be found on pages 50 and 51 of Section C for Owners and Tenants, respectively. These supporting pages show the development of the statewide net cost of reinsurance per policy as well as the net cost of reinsurance for each territory group.

Q.   Can you please explain why a provision for the net cost of reinsurance is necessary in this filing?

A.   Yes. Mobile homeowners insurance is one of several types of coverages that has exposure to potential catastrophic events. In such coverages (mobile homeowners, homeowners, and other property coverages), individual catastrophic events can result in significant losses that exceed the amount of liability the typical insurer can reasonably assume for solvency and financial stability considerations. As a result, in these lines of business, insurers routinely purchase reinsurance to mitigate their exposure to extreme events. In order to accurately reflect the expected costs associated with insuring property policies, it is appropriate to include the cost of this reinsurance in the ratemaking process for these lines of insurance.

Q. **In your opinion, is it appropriate to include a provision for the net cost of reinsurance in mobile homeowners rates in North Carolina?**

A. Yes. Insurance companies writing mobile homeowners policies in North Carolina incur a significant cost for bearing the risk of insuring properties exposed to catastrophic events. Regardless of whether the risk of catastrophic losses is retained by the primary insurer or transferred to a reinsurer, the market cost of bearing that risk must be included in the rates. This is a foundational actuarial principle included in ASOP No. 29 regarding *Expense Provisions in Property/Casualty Insurance Ratemaking*, and the North Carolina statutes (N.C. Gen. Stat. § 58-36-10(7)) provide for inclusion of the cost of reinsurance in rates. The net cost of reinsurance is a legitimate cost of the risk transfer inherent in the purchase of property insurance, and as such, the net cost of reinsurance should be included in the North Carolina mobile homeowners rates.

Q. **In your opinion, is it appropriate to allocate reinsurance costs within North Carolina in a way that is proportional to risk?**

A. Yes. The risk associated with insuring properties exposed to catastrophic events varies geographically within North Carolina. As such, the cost for bearing that risk should be allocated proportional to the measurement of risk. In their analysis of reinsurance costs for this filing, Aon provided the statewide provision for the net cost of reinsurance and, as mentioned above, also allocated the reinsurance costs to each MH(F) policy form and each territory. This allocation is appropriate and consistent with the objective of producing rates that are fair, reasonable, and not unfairly discriminatory across policyholders.

Q. **Please explain the amounts shown in row 6 of Section C, page 1, identified as the *indicated manual base rate*.**

A. The dollar amounts shown in row 6 are the sum of the base rate excluding reinsurance cost (row 3), the compensation for assessment risk per policy (row 4), and the net cost of reinsurance per policy (row 5) for each policy form. These amounts represent the average base rate for each MH(F) policy form after reflecting reasonable provisions for all expected losses, expenses, profit, and contingencies quantified in this filing. If insurance companies did not deviate from the manual premiums, the *indicated manual base rate* would represent the appropriate, actuarially sound base rate for each policy form.

Q. **What is the source of the percentages shown in row 7 of Section C, page 1, labeled as *net deviations*?**

A. As included in the prior mobile homeowners MH(F) rate filing, the Rate Bureau has selected a provision for *net deviations* of 5%. In making this selection, we evaluated historical written premium and manual premium for each year from 2018 through 2022, and we considered the magnitude of both downward deviations and

upward surcharges through consent to rate. The data supporting this analysis can be found on page 52 of Section C. In an attempt to be conservative and to be consistent with the prior mobile homeowners MH(F) filing, the Rate Bureau retained the same selected provision for net deviations of 5%.

Q. **In your opinion, is it appropriate to include a provision for net deviations in mobile homeowners rates in North Carolina?**

A. Yes. The difference between the direct premium written by insurance companies and the manual premium should be considered when determining the actuarially sound indicated manual premium. The manual premium must be adjusted upward such that the deviated premium charged by insurance companies will be adequate. In my opinion, the selected provision for net deviations of 5% is a conservative estimate that only partially recognizes the significant deviations we expect to be applied by mobile homeowners insurance companies.

Q. **Please explain the amounts shown in row 8 of Section C, page 1, identified as the *required base rate*.**

A. The dollar amounts shown in row 8 are the indicated manual base rate for each policy form (row 6) adjusted for the net deviations (row 7). As mentioned above, if insurance companies were not anticipated to deviate from the manual premiums, the indicated manual base rate for each policy form (row 6) would be adequate and appropriate. However, because historical experience shows that mobile homeowners insurance companies consistently deviate by significant amounts each year, the indicated manual base rate for each policy form is divided by 100% minus the provision for net deviations to determine the *required base rate*. The *required base rate* for each policy form represents the appropriate base rate such that, if insurance companies apply net deviations of 5%, the charged premiums will be sufficient to cover all expected costs associated with the transfer of risk related to mobile homeowners insurance.

Q. **Would you explain the amounts shown in row 9 of Section C, page 1, labeled as the *average current base rate*?**

A. Row 9 displays the current base rate for each policy form, averaged across all policies from 2022 included in our analysis. The average statewide base rate for each policy form assumes each policyholder purchases the base coverage and has the same characteristics as the base risk.

Q. **Please explain row 10 of Section C, page 1, identified as the *indicated rate change*.**

A. The percentages shown in row 10 represent the needed changes to the current base rate for each policy form so that the mobile homeowners rates will be adequate for the cost levels expected to prevail in the one-year period following

the effective date of this filing. The *indicated rate change* is calculated as the required base rate (row 8) divided by the current average base rate (row 9) minus 1. The resulting indicated rate change for each policy form is as follows:

- Owners = 83.0%
- Tenants = 61.5%

The overall indicated rate change across all MH(F) policy forms, as summarized on page 1 of Section A, is 82.9%.

Q. Would you explain the percentages shown in row 11 of Section C, page 1, labeled as the *proposed rate change - year 1*?

A. Due to the wide range of indicated rate changes across the territory groups and MH(F) policy forms, the Rate Bureau's Governing Committee decided to implement the indicated rates over a three-year period. The resulting proposed rate change in year 1 for each policy form is as follows:

- Owners = 24.9%
- Tenants = 24.8%

The overall proposed rate change across all MH(F) policy forms for year 1, as summarized on page 1 of Section A, is 24.9%.

Q. Please explain row 12 of Section C, page 1, identified as the *proposed base rate - year 1*.

A. The dollar amounts shown in row 12 represent the *proposed year 1 base rate* for each policy form, averaged across all policies from 2022 included in our analysis. Similar to the average current base rate, the average statewide proposed year 1 base rate for each policy form assumes each policyholder purchases the base coverage and has the same characteristics as the base risk. The proposed year 1 base rate for each policy form was calculated as the average current base rate (row 9) multiplied by 1 plus the proposed year 1 rate change (row 11).

Q. Would you explain the percentages shown in row 13 of Section C, page 1, labeled as the *proposed rate change - year 2*?

A. As mentioned above, the Rate Bureau's Governing Committee decided to implement the indicated rates over a three-year period. The resulting proposed rate change in year 2 for each policy form is as follows:

- Owners = 21.2%
- Tenants = 13.9%

The overall proposed rate change across all MH(F) policy forms for year 2, as summarized on page 1 of Section A, is 21.2%.

Q. **Please explain row 14 of Section C, page 1, identified as the *proposed base rate - year 2*.**

A. Similar to the amounts shown in row 12, the dollar amounts shown in row 14 represent the *proposed year 2 base rate* for each policy form, averaged across all policies from 2022 included in our analysis. The average statewide proposed year 2 base rate for each policy form assumes each policyholder purchases the base coverage and has the same characteristics as the base risk. The proposed year 2 base rate for each policy form was calculated as the proposed year 1 base rate (row 12) multiplied by 1 plus the proposed year 2 rate change (row 13).

Q. **Would you explain the percentages shown in row 15 of Section C, page 1, labeled as the *proposed rate change - year 3*?**

A. As mentioned above, the Rate Bureau's Governing Committee decided to implement the indicated rates over a three-year period. The resulting proposed rate change in year 3 for each policy form is as follows:

- Owners = 21.0%
- Tenants = 13.6%

The overall proposed rate change across all MH(F) policy forms for year 3, as summarized on page 1 of Section A, is 20.9%.

Q. **Please explain row 16 of Section C, page 1, identified as the *proposed base rate - year 3*.**

A. Similar to the amounts shown in rows 12 and 14, the dollar amounts shown in row 16 represent the *proposed year 3 base rate* for each policy form, averaged across all policies from 2022 included in our analysis. The average statewide proposed year 3 base rate for each policy form assumes each policyholder purchases the base coverage and has the same characteristics as the base risk. The proposed year 3 base rate for each policy form was calculated as the proposed year 2 base rate (row 14) multiplied by 1 plus the proposed year 3 rate change (row 15).

Q. **What is the difference between the <u>indicated</u> rate change and the <u>proposed</u> rate changes in years 1 through 3?**

A. The indicated rate change is the actuarially sound and correct rate at a statewide level or by territory group for each mobile homeowners MH(F) policy form. It is the indicated rate change (statewide or by territory group) that is needed to sufficiently cover the expected losses and expenses while still providing a fair and reasonable profit. The indicated rate is also the rate that complies with the statutory requirement that rates not be excessive, inadequate, or unfairly discriminatory.

In order to mitigate the impact of these indicated rate changes on policyholders, the Rate Bureau decided to implement the indicated rates over a three-year period

in order to reduce the annual impact of the proposed rate change for each MH(F) policy form. Based on the selections of the Rate Bureau's Governing Committee, the proposed statewide rate change for each policy form differs slightly between years 1, 2, and 3. The proposed rate changes were selected so that the annual rate change within a territory group for either policy form was 49.0% or less, and so that the overall annual rate change for any policy form was less than 25.0%.

In my opinion, the Rate Bureau's proposed three-year implementation of the indicated rate change for each MH(F) policy form is reasonable and is an effective strategy to reduce the impact of this filing.

Q. **In an earlier question discussing the *total base class loss cost* found in row 1 of Section C, page 1, your response made reference to Section C, pages 2 and 4. Looking at Section C, page 2, what is shown on this exhibit?**

A.   Section C, page 2 shows the determination of the statewide base class loss cost for the Owners policy forms. More specifically, this exhibit aggregates non-hurricane losses and loss adjustment expenses for the years 2018 through 2022 and combines these amounts with a modeled hurricane loss cost to develop the total base class loss cost. The specific calculations used to aggregate the non-hurricane and hurricane loss experience will be discussed later. Page 4 shows similar calculations for the Tenants policy form.

Q. **Referring to column 1 on page 2 of Section C, what is the source for the *non-hurricane ultimate loss and LAE* (loss adjustment expense)?**

A.   The *non-hurricane ultimate loss and LAE* shown in column 1 is developed on page 3 of Section C for each year from 2018 through 2022. As implied by the column label, the amounts in column 1 have been developed to ultimate and adjusted to include a provision for expected loss adjustment expenses. Those calculations, as well as adjustments to include expected rather than actual excess wind losses and expected rather than actual flood losses, can be found in more detail on page 3 of Section C.

Q. **If we turn our attention to Section C, page 3, what is shown on this exhibit?**

A.   As mentioned in the prior response, Section C, page 3 shows the determination of the *non-hurricane ultimate loss and LAE* for the Owners policy forms. Column 1 on this exhibit contains incurred loss and ALAE for the years 2018 through 2022 from all causes of loss except those losses caused by hurricanes. As noted previously, the mobile homeowners MH(F) policy includes coverage for flood losses, so any flood losses other than storm surge resulting from a hurricane would be included in the historical loss experience (though such losses may be limited by the excess flood procedure).

Q. Please explain columns 2 and 4 of Section C, page 3, which both contain data related to excess wind.

A. The incurred loss and ALAE amounts in column 1 reflect all non-hurricane losses, including actual wind losses that may have resulted from very severe storms such as tornados, thunderstorms, or hailstorms. In order to smooth out any potential volatility of severe non-hurricane wind losses, we used the same excess wind methodology as used in prior Rate Bureau property filings. The calculations supporting this excess wind methodology can be found on pages 28 and 29 of Section C. Based on the results of the excess wind methodology, a portion of the wind loss and ALAE included in column 1 is determined to be excess wind loss and ALAE and is removed from the historical loss experience for the purpose of calculating a reasonable provision for expected non-hurricane losses. Column 2 shows the amount of excess wind loss and ALAE incurred under the Owners policy forms that is being removed from the incurred loss and ALAE in column 1. In place of the actual excess wind loss and ALAE in column 2, an excess wind loss factor is applied to each year of experience, as shown in column 4. By applying an excess wind loss factor, the Rate Bureau is able to smooth out potentially volatile historical loss experience and reflect a consistent provision for long-term excess wind loss and ALAE.

Q. Please describe the excess wind methodology found on pages 28 and 29 of Section C in more detail.

A. The excess wind methodology used in this filing and in prior Rate Bureau property filings relies on a longer history of loss experience than the five years used to support most of the other components of this filing. Although the mobile homeowners excess wind loss experience is not as extensive as in homeowners, the Rate Bureau was able to aggregate 25 years of mobile homeowners non-hurricane losses for this filing in order to evaluate excess wind losses. Page 28 of Section C shows non-hurricane losses by year from 1998 through 2022. Among the non-hurricane (and non-liability) losses, the wind losses and flood losses are shown separately from the total non-hurricane losses excluding wind and flood. The ratio of wind losses to total non-hurricane losses excluding wind and flood is calculated for each year and, based on calculations consistent with prior Rate Bureau property filings, the amount of non-hurricane excess wind losses is determined for each year. In addition to determining the excess wind losses by year, the yearly ratios of wind losses to total non-hurricane losses excluding wind and flood are used to calculate an excess wind loss factor of 1.096. This excess wind loss factor represents the provision needed to incorporate the long-term average excess wind losses in the adjusted non-hurricane loss experience.

The excess wind losses determined with this methodology reflect all MH(F) policy forms combined. As a result, the total MH(F) excess wind losses are allocated by policy form for each year based on the distribution of incurred non-hurricane wind losses among the policy forms within each year. In addition to allocating the excess

wind losses, a non-hurricane ALAE factor is calculated for each year based on the ratio of total non-hurricane (and non-liability) loss and ALAE to total non-hurricane (and non-liability) losses. The resulting non-hurricane ALAE factors are applied to the excess wind losses for each policy form within each year to determine the excess wind loss and ALAE by policy form. That allocation process and application of a non-hurricane ALAE factor can be seen on page 29 of Section C.

Q.   Please explain columns 3 and 5 of Section C, page 3, which both contain data related to excess flood.

A.   Similar to the above discussion related to excess wind losses, the incurred loss and ALAE amounts in column 1 reflect all non-hurricane losses, including actual flood losses that may have resulted from severe thunderstorms, heavy rainfalls, or extensive snow runoff. In order to smooth out any potential volatility of severe non-hurricane flood losses, we used the same excess flood methodology as described above for excess wind losses. The calculations supporting this excess flood methodology can be found on pages 30 and 31 of Section C. Based on the results of the excess flood methodology, a portion of the flood loss and ALAE included in column 1 is determined to be excess flood loss and ALAE and are removed from the historical loss experience for the purpose of calculating a reasonable provision for expected non-hurricane losses. Column 3 shows the amount of excess flood loss and ALAE incurred under the Owners policy forms that is being removed from the incurred loss and ALAE in column 1. In place of the actual excess flood loss and ALAE in column 3, an excess flood loss factor is applied to each year of experience, as shown in column 5. By applying an excess flood loss factor, the Rate Bureau is able to smooth out potentially volatile historical loss experience and reflect a consistent provision for long-term excess flood loss and ALAE.

Q.   Please describe the excess flood methodology found on pages 30 and 31 of Section C in more detail.

A.   The excess flood methodology used in this filing and in prior Rate Bureau mobile homeowners filings relies on a longer history of loss experience than the five years used to support most of the other components of this filing. Like the excess wind methodology described above, the Rate Bureau was able to aggregate 25 years of mobile homeowners non-hurricane losses for this filing in order to evaluate excess flood losses. Page 30 of Section C shows non-hurricane losses by year from 1998 through 2022. Among the non-hurricane (and non-liability) losses, the wind losses and flood losses are shown separately from the total non-hurricane losses excluding wind and flood. The ratio of flood losses to total non-hurricane losses excluding wind and flood is calculated for each year and, based on calculations consistent with the excess wind methodology, the amount of non-hurricane excess flood losses is determined for each year. In addition to determining the excess flood losses by year, the yearly ratios of flood losses to total non-hurricane losses excluding wind and flood are used to calculate an excess flood loss factor of 1.006. This excess flood loss factor represents the

provision needed to incorporate the long-term average excess flood losses in the adjusted non-hurricane loss experience.

The excess flood losses determined with this methodology reflect all MH(F) policy forms combined. As a result, the total MH(F) excess flood losses are allocated by policy form for each year based on the distribution of incurred non-hurricane flood losses among the policy forms within each year. In addition to allocating the excess flood losses, a non-hurricane ALAE factor is calculated for each year based on the ratio of total non-hurricane (and non-liability) loss and ALAE to total non-hurricane (and non-liability) losses. The resulting non-hurricane ALAE factors are applied to the excess flood losses for each policy form within each year to determine the excess flood loss and ALAE by policy form. That allocation process and application of a non-hurricane ALAE factor can be seen on page 31 of Section C

Q.   How are the results of the excess wind methodology and excess flood methodology applied to the Owners loss experience on page 3 of Section C?

A.   Based on the wind and flood allocation processes described above, column 2 on page 3 of Section C shows the amount of excess wind loss and ALAE allocated to the Owners policy forms for each year, and column 3 shows the amount of excess flood loss and ALAE allocated for each year. In addition, the excess wind loss factor is shown in column 4 and the excess flood loss factor is shown in column 5. Column 6 on this exhibit adjusts the non-hurricane incurred loss and ALAE in column 1 by removing the excess wind loss and ALAE (column 2) and excess flood loss and ALAE (column 3), and then multiplying the result by the sum of the excess wind loss factor (column 4) and excess flood factor (column 5) minus 1.00. This calculation produces the *adjusted non-hurricane incurred loss and ALAE* for each year.

Q.   Is the adjusted non-hurricane incurred loss and ALAE shown in column 6 adjusted in any other way?

A.   Yes. After adjusting for excess wind loss and ALAE and excess flood loss and ALAE, the amounts in column 6 are further adjusted for loss development and to include a provision for expected unallocated loss adjustment expenses (ULAE).

Based on data collected in response to the Rate Bureau's mobile homeowners data call, we evaluated historical loss development data and historical claim development data for MH(F) Owners and MH(F) Tenants on a combined basis. Details of that analysis can be found on pages 32 through 33 of Section C, and the resulting loss and ALAE development factors are included in column 7 on page 3 of Section C. Column 8 on this same exhibit calculates the *non-hurricane ultimate loss and ALAE* for each year by multiplying the adjusted non-hurricane incurred loss and ALAE (column 6) by the corresponding loss and ALAE development factor (column 7).

In addition to evaluating historical loss and ALAE development data, we also compared the ratio of incurred ULAE to incurred loss and ALAE for each of the five years of experience used in the overall rate indications. This analysis of historical ULAE can be found on page 47 of Section C. As noted above in the discussion of fixed and variable expenses, the historical ULAE data was also restated to reflect the member companies currently writing MH(F) policies. Based on the average ratio of incurred ULAE to incurred loss and ALAE, the Rate Bureau selected a ULAE provision of 15.1%. Through the use of a ULAE factor equal to 1.151, the selected ULAE provision is added to non-catastrophe mobile homeowners loss and ALAE evaluated in the rate indications.

Referring back to page 3 of Section C, column 10 calculates the *non-hurricane ultimate loss and LAE* for each year by multiplying the non-hurricane ultimate loss and ALAE (column 8) by the ULAE factor, which is shown in column 9.

Q.   In your opinion, is the provision for unallocated loss adjustment expense included in this filing reasonable?

A.   Yes, the unallocated loss adjustment expense provision is reasonable. It is common practice in the industry to use an average of historical experience to determine an unallocated loss adjustment expense provision.

Q.   Are the non-hurricane ultimate loss and LAE amounts on page 3 of Section C the same as the amounts shown on page 2 of Section C?

A.   Yes. After determining the non-hurricane ultimate loss and LAE on page 3 of Section C, those amounts are copied into column 1 on page 2 so that additional adjustments and calculations can be completed.

Q.   What other adjustments must be made to the non-hurricane losses and LAE?

A.   The losses need to be adjusted by a loss trend factor to reflect the cost levels expected to prevail during the period that the proposed rates are anticipated to be in effect. The calculations in the rate review and in this filing assumed an effective date of October 1, 2024. To the extent the filing is effective on a date later than the October 1, 2024 assumed effective date, then the rate indications would be different than those presented in this filing.

Q.   Please describe how the loss trend factors are developed and applied.

A.   Loss trend data was evaluated separately for each MH(F) policy form in an analysis on pages 34 through 37 of Section C. For the Owners policy forms, only member company data was considered, but for the Tenants policy form, both MH(F) Tenants data and MH(C) Personal Effects data were considered.

The member company data included quarterly ultimate claim frequencies and quarterly ultimate loss severities evaluated on a 12-month moving basis from the 4th quarter of 2017 to the 4th quarter of 2022. The reported claims and incurred loss and ALAE were developed to ultimate using interpolated quarterly development factors found on page 37 of Section C.

After compiling the member company-based frequencies and severities and the MH(C) Personal Effects frequencies and severities (only for the Tenants policy form), several different exponential trends were fit to the data in order to evaluate the historical trends and to project potential future trends.

The Rate Bureau reviewed the exponential trends fit to the member company data as well as the exponential trends fit to the MH(C) Personal Effects data that was considered for the Tenants policy form. Based on the fitted trends, the Rate Bureau selected frequency and severity trends for two separate time periods. Trends were selected for the historical experience period and separate trends were selected for the projection period. This two-period trend approach is commonly used throughout the industry because it allows companies to reflect the latest changes in trends as historical experience is projected into the future.

The experience period trends were applied to adjust losses from the midpoint of each historical year to the end date of the most recent experience period (i.e., 12/31/2022). Following this, the projection period trends were applied from the end date of the most recent experience period (i.e., 12/31/2022) to the average claim date for the time period that the proposed rates are anticipated to be in effect (i.e., 10/1/2025). The selected experience period loss trends and projection period loss trends were each applied for the appropriate number of years and the combined effect of these trends was calculated to determine loss trend factors for each year in the historical experience period. The calculation of the loss trend factors for each of the MH(F) policy forms can be found on page 34 of Section C.

Q. **After loss trend factors are applied, what other adjustments are made to the non-hurricane ultimate loss and LAE amounts?**

A. The calculated loss trend factors discussed above can be found in column 2 on page 2 of Section C. In column 5 on the same exhibit, the *trended average loss cost* is calculated for each year based on multiplying the non-hurricane ultimate loss and LAE (column 1) by the loss trend factor (column 2), and then dividing by the earned house years (column 3) and the premium trend factor (column 4). The losses need to be offset (i.e., adjusted downward) by a premium trend factor to reflect the fact that higher cost levels are partially the result of higher amounts of coverage being purchased in each subsequent year. These higher amounts of coverage generally correspond to higher average premiums, and the trend in those higher average premiums should be reflected to mitigate the impact of the loss trend factors.

Q. Please describe how the premium trend factors are developed and applied.

A. Premium trend data was evaluated separately for each of the MH(F) policy forms in an analysis on pages 39 and 40 of Section C.

For each of the policy forms, we calculated the average rating factor by year. The average rating factors were calculated as the ratio of the earned premium at current manual level (using each policy's rating characteristics) to the earned premium at current base class level. The earned premium calculations were completed using the extension of exposures method, as described in Section E. After compiling the average rating factors by year, several different exponential trends were fit to the data in order to evaluate the historical trends and to project potential future trends.

The Rate Bureau reviewed the exponential trends fit to the average rating factors and selected trends for two separate time periods. Similar to the loss trend analysis, premium trends were selected for the historical experience period and separate trends were selected for the projection period. As mentioned previously, this two-period trend approach is commonly used throughout the industry because it allows companies to reflect the latest changes in trends as historical experience is projected into the future.

The experience period trends were applied to adjust premiums from the average written date of each historical year to the end date of the most recent experience period (i.e., 12/31/2022). Following this, the projection period trends were applied from the end date of the most recent experience period (i.e., 12/31/2022) to the average written date for the time period that the proposed rates are anticipated to be in effect (i.e., 4/1/2025). The selected experience period premium trends and projection period premium trends were each applied for the appropriate number of years and the combined effect of these trends was calculated to determine premium trend factors for each year.

Q. After premium trend factors are applied, are the trended average loss costs shown in column 5 on page 2 of Section C adjusted in any other way?

A. Yes. The trended average loss costs in column 5 are divided by the average rating factor for each year (column 6) to determine the *trended base class loss cost* as shown in column 7. The average rating factor for each year is calculated as the ratio of the average premium at current manual level to the average current base rate. This ratio represents the relative difference in premium between the average mobile homeowners policy and the base class. To the extent the average policyholder purchases different amounts of coverage, purchases different deductibles, or resides in a different territory group than the base class, the average rating factor will reflect these differences. The average rating factors by year in column 6 are the same factors as were used to develop the premium trends on page 40 of Section C.

Q. **Please explain how the trended base class loss costs in column 7 on page 2 of Section C are used after they are calculated for each year in the experience period.**

A. The trended base class loss costs shown in column 7 are aggregated using the accident year weights in column 8 to determine the *weighted average non-hurricane base class loss cost* (row 9). As noted previously, we used weights of 10%, 15%, 20%, 25%, and 30% for MH(F) Owners, which is consistent with previous mobile homeowners filings submitted by the Rate Bureau. However, for the MH(F) Tenants policy form, we used an even distribution of weights (i.e., 20% for each year) due to the low volume of business in this segment and potential variability by year.

The credibility of the weighted average non-hurricane base class loss cost is evaluated for each MH(F) policy form based on policy form-specific full-credibility standards. To the extent the weighted average non-hurricane base class loss cost is not fully credible, the complement of credibility is determined based on loss cost estimates from the prior MH(F) rate filing and updated trends from this filing. More specifically, the credibility-weighted loss cost from the prior filing is trended to the proposed effective date of this filing using the selected loss trend and premium trend for the projection period in order to calculate the complement of credibility. The calculation of the complement of credibility for each MH(F) policy form can be found on page 42 of Section C. Using the weighted average non-hurricane base class loss cost (row 9), the credibility of that loss cost (row 10), and the complement of credibility (row 11), the *credibility-weighted loss cost* is calculated as shown in row 12.

Q. **How is credibility determined in this filing?**

A. The credibility calculated in row 10 on page 2 of Section C is based on a consistent claims standard for full credibility (i.e., 271 claims) for each of the MH(F) policy forms. However, that claims standard for full credibility is adjusted based on the frequency of claims for each policy form and the variability of the size of those claims. More details on this credibility procedure can be found in the Explanatory Memorandum included in Exhibit RB-1. The result of this adjustment for claims frequency and variability is a full-credibility standard using earned house years that is unique to each policy form. The resulting full-credibility standards for each of the MH(F) policy forms, rounded up to the nearest 10,000 earned house years, are as follows:

- Owners = 30,000
- Tenants = 200,000

To determine the credibility shown in row 10, the number of earned house years during the five-year experience period is compared to the policy form's full-credibility standard and, if a policy form's historical experience is not fully credible, the square root rule is applied. Among the MH(F) policy forms, the Owners

weighted average non-hurricane base class loss cost is fully credible and the Tenants weighted average non-hurricane base class loss cost has a credibility of 12.9%.

The above full-credibility standards for the MH(F) policy forms are also applied in determining the indicated base class loss cost by territory group, which is discussed later in this testimony.

Q. Please explain the amount shown in row 13 on page 2 of Section C, labeled as the *modeled hurricane base class loss cost*.

A. The amount shown in row 13 is the provision for prospective hurricane losses related to the coverage afforded by the MH(F) Owners policy forms. The credibility-weighted loss cost shown in row 12 includes only non-hurricane losses, so an additional provision is necessary to account for the exposure to hurricane losses on a mobile homeowners policy.

Q. What is the source of the *modeled hurricane base class loss cost* shown in row 13 of Section C, page 2?

A. The source of the modeled hurricane losses for each MH(F) policy form is an analysis completed for the Rate Bureau by Aon. In addition to Aon's analyses to support the compensation for assessment risk and the net cost of reinsurance (described previously), Aon was also retained by the Rate Bureau to provide the statewide modeled hurricane losses for each of the MH(F) policy forms as well as modeled hurricane losses for each territory. This analysis from Aon is consistent with other recent property rate filings submitted by the Rate Bureau, except that the models were run with storm surge losses to reflect the fact that the mobile homeowners MH(F) policy covers flood losses. It is for this reason, as noted earlier, that when the filing and my testimony refer to "hurricane losses," that term includes hurricane wind and storm surge losses, but not inland flood losses. In order to avoid double counting hurricane losses, historical hurricane wind and hurricane storm surge losses were removed from the data underlying our analysis. More details of Aon's analysis, including support for the catastrophe LAE provision of 6.0%, are included in Ms. Mao's testimony and exhibits.

To determine the *modeled hurricane base class loss cost* found in row 13 of Section C, page 2, the trended modeled hurricane loss and LAE for each MH(F) policy form is divided by the corresponding number of 2022 earned house years, the 2022 average rating factor, and the 2022 premium trend factor. These calculations can be found on page 43 of Section C for each of the MH(F) policy forms.

Q. Can you please explain why hurricane models are used to estimate the hurricane losses?

A. Yes. Hurricane models are used to estimate the expected hurricane losses because they provide a more accurate way of quantifying the exposure to hurricanes than using prior insurance ratemaking methodologies. In addition, hurricane models include a storm surge component, which allows us to more accurately quantify the expected losses from storm surge caused by hurricanes as well as the expected hurricane wind losses. Hurricanes are highly variable in their frequency, severity, and place of occurrence. By simulating thousands of possible hurricane events, hurricane models provide a more complete perspective on the distribution of the types of hurricanes that could occur and avoid the volatility that could result from using actual hurricane losses. If only five years of historical experience were used to evaluate hurricane losses, similar to what we are using for the non-hurricane component of this rate indication, it would be feasible to have a five-year period with no hurricane losses or a five-year period with multiple severe hurricane events. Neither of those scenarios provides a reasonable representation of the expected exposure to hurricane losses in the prospective policy period and, as such, it would not be actuarially appropriate to rely on such a methodology. The use of hurricane models alleviates this issue and provides a more accurate estimate of expected hurricane losses.

Q. Did the Rate Bureau consider actual hurricane losses?

A. Yes. The actual hurricane losses during the five years of historical experience were reviewed and considered; however, as has been done in prior Rate Bureau property filings, those losses were excluded from the historical losses used in the filing and were replaced by modeled hurricane losses.

Q. What data did Milliman provide to Aon to enable Aon to perform its analysis?

A. Milliman provided Aon with a dataset containing all of the North Carolina mobile homeowners MH(F) insurance exposures. This data included the number of earned house years and the amount of trended earned insurance years for the most recent year in the experience period (i.e., 2022). The dataset also included several important risk characteristics such as the territory (and county and city, if available), occupancy code, MH(F) policy form, and whether the mobile home is tied down. The data provided to Aon by Milliman was correct to the best of my knowledge and information.

Q. Please describe how the exposure trend factors are developed and applied.

A. Exposure trend data was evaluated separately for each policy form in an analysis on page 38 of Section C.

For each policy form, we calculated the average amount of insurance per policy on a 12-month moving basis from the 4th quarter of 2017 to the 4th quarter of 2022. After compiling the average amount of insurance by quarter, several different exponential trends were fit to the data in order to project potential future trends.

Because the exposure trends were only needed to trend the MH(F) exposures into the future in order to be used as inputs in the hurricane models, the Rate Bureau did not select trends for the historical experience period.

The Rate Bureau reviewed the exponential trends fit to the average amounts of insurance and selected trends for the projection period. The projection period trends were then applied from the average written date of the most recent calendar year (i.e., 7/1/2022) to the average written date for the time period that the proposed rates are anticipated to be in effect (i.e., 4/1/2025) to determine exposure trend factors for each policy form. The exposure trend factors were applied to the amount of earned insurance years on each policy in effect during the most recent year in the experience period (i.e., 2022).

Q. **What model versions and modeling assumptions were used to develop estimated hurricane losses?**

A. The current AIR model is Touchstone v10 and the current RMS model is RiskLink v23. To develop the expected hurricane losses, Aon relied on AIR's Standard event set and on RMS' Historical event set. These event sets were used instead of AIR's Warm Sea-Surface Temperature (WSST) event set and RMS' Medium-Term Rate event set. Although many primary insurance companies consider the WSST and Medium-Term Rate event sets when developing expected hurricane losses for indicated rates in states other than North Carolina, the event sets selected for this filing are reasonable and actuarially sound.

Both the AIR and RMS models were run with aggregate demand surge included, which was identified as loss amplification in the RMS model. This standard procedure accounts for the expected additional costs of labor, materials, and services after a very large hurricane occurs. Historical experience shows that, when major catastrophic events occur, the increased demand for building materials, labor, temporary housing, and other basic necessities can exceed the supply of these same items, which consequently increases their cost. Running models with demand surge is consistent with the Rate Bureau's prior filings, and is the common practice by insurance companies when developing rates based on modeled hurricane losses.

As discussed previously, the modeled hurricane losses also include losses from storm surge due to the fact that the mobile homeowners MH(F) policy includes coverage for flood losses.

Q. **Were any other calculations applied to the hurricane losses derived from the models?**

A. Yes. Before providing the blended hurricane losses, Aon applied a hurricane-specific provision for loss adjustment expense. As noted previously, more details

of Aon's analysis, including support for the catastrophe LAE provision of 6.0%, are included in Ms. Mao's testimony and exhibits.

Q.   In your opinion, is it appropriate to allocate modeled hurricane losses within North Carolina in a way that is proportional to risk?

A.   Yes. The risk associated with insuring properties exposed to hurricane events varies geographically within North Carolina. As such, the cost for bearing that risk should be allocated proportional to the measurement of risk. In their analysis of modeled hurricane losses for this filing, Aon provided the statewide modeled hurricane losses and also allocated the modeled hurricane losses to each MH(F) policy form and each territory. This allocation is appropriate and consistent with the objective of producing rates that are fair, reasonable, and not unfairly discriminatory across policyholders.

Q.   Please explain the amount shown in row 14 on page 2 of Section C, labeled as the *total base class loss cost*.

A.   The amount shown in row 14, that is the *total base class loss cost*, is the average amount of projected loss per exposure, including both non-hurricane and hurricane losses, for the risk identified as the base class for each respective MH(F) policy form. It is calculated as the sum of the credibility-weighted loss cost shown in row 12 and the modeled hurricane base class loss cost shown in row 13.

As noted at the beginning of my testimony, it is the total base class loss cost that begins the calculation of the indicated rate change on page 1 of Section C. The total base class loss cost is copied into row 1 on page 1 so that additional adjustments and calculations can be completed to develop the statewide indicated rate change for each MH(F) policy form.

Q.   Up until now, your testimony has focused on the calculations on pages 1 through 3 of Section C. Please explain how pages 4 and 5 compare to pages 1 through 3.

A.   As described in my testimony above, page 1 of Section C develops the statewide indicated rate changes for the policy forms offered in the mobile homeowners MH(F) program. As noted previously, those policy forms include MH(F)-2 and MH(F)-3, which are collectively referred to as Owners, and MH(F)-4, which is referred to as Tenants. The calculations to develop the indicated rate change for each policy form begin with the *total base class loss cost*, which is derived on pages 2 and 4 of Section C, depending on the policy form. My testimony above discussed the calculations on page 2, which are further supported by additional calculations on page 3. The calculations on pages 2 and 3 of Section C all relate to the Owners policy forms.

Pages 4 and 5 of Section C display comparable calculations for the Tenants policy form. The calculations and methodology on page 4 are identical to the calculations and methodology on page 2 (except for the differences noted above in the exposure-based standards for full credibility and in the accident year weights). Similarly, the calculations and methodology on page 5 are identical to the calculations and methodology on page 3.

Q.   Does the filing review the indicated rate changes by territory or territory group?

A.   Yes. The mobile homeowners MH(F) territory definitions are consistent with the territory definitions currently in use in homeowners and dwelling insurance in North Carolina. To increase the credibility and stability of the rates being evaluated, six territory groups are used in the mobile homeowners program.

Beginning on page 6 of Section C, the Rate Bureau develops indicated rate changes by territory group for each MH(F) policy form using a similar methodology as the statewide indication. Pages 6 through 16 document the Owners indicated rate changes by territory group, while the Tenants indicated rate changes by territory group can be found on pages 17 through 27.

For each of these MH(F) policy forms, a non-hurricane base class loss cost is calculated by territory group using the historical loss experience. A credibility value is assigned to each territory group for each policy form based on the number of house years underlying each loss cost and the same credibility standards discussed above. Using the credibility for each territory group, a credibility-weighted non-hurricane base class loss cost is determined by territory group. In addition, a modeled hurricane base class loss cost is developed by territory group for each policy form. The non-hurricane loss costs and modeled hurricane loss costs are combined to develop the indicated base class loss cost by territory group for each policy form. Additional calculations are applied to each territory group to reflect expenses, policyholder dividends, compensation for assessment risk, net cost of reinsurance, and net deviations in a similar manner as applied at a statewide level. The result of these calculations is an indicated rate change by territory group for each MH(F) policy form.

Columns 14 through 16 on pages 6 (Owners) and 17 (Tenants) of Section C show the proposed rate changes by territory group, as selected by the Rate Bureau in proposing to implement those changes over three years.

In my opinion, the methodology used to develop the indicated rate-level change by territory group and by MH(F) policy form is reasonable and is consistent with widely-used actuarial ratemaking practices.

Q.   Does the filing review the wind exclusion credits?

A.   Yes. Based on the rates being proposed with this filing in territory groups 1 and 2 for each MH(F) policy form, the wind exclusion credits are being updated in a corresponding manner, as can be seen on page 1 of Section D. Using the underlying formula for the statewide rate indication, an adjustment is made to the appropriate components of the indication formula to calculate the non-wind losses as a percentage of the total losses. The indicated non-wind rate is subtracted from the indicated overall rate to determine the indicated wind exclusion credit for each territory group.

Q.   **Does the filing include proposed changes to any rating variables used in the mobile homeowners MH(F) rating plan?**

A.   Yes. With this filing, the Rate Bureau is proposing revisions to the wind exclusion credits as discussed above.

Q.   **I understand that you are not providing an opinion concerning the underwriting profit (profit) provision, the compensation for assessment risk (CAR) provision, or the net cost of reinsurance (NCOR) provision. If I ask you to assume that the provisions for profit, CAR, and NCOR are reasonable and actuarially sound, then, in your opinion, is the overall rate-level indication shown in the mobile homeowners MH(F) filing by the North Carolina Rate Bureau reasonable and actuarially sound?**

A.   Yes, if I assume that the provisions for profit, CAR, and NCOR are reasonable, then, in my opinion, the overall mobile homeowners MH(F) rate-level indication shown by the Rate Bureau, and the rate-level indications for each policy form and each territory group, are reasonable and actuarially sound.

Q.   **Assuming that the provisions for profit, CAR, and NCOR are reasonable, do you have an opinion on whether the proposed rates reasonably provide for the expected costs for mobile homeowners MH(F) insurance in North Carolina?**

A.   Yes, if I assume that the provisions for profit, CAR, and NCOR are reasonable, then, in my opinion, the proposed rates in this filing reasonably reflect the expected costs for mobile homeowners MH(F) insurance in North Carolina, except to the extent that the proposed rates are implemented over three years instead of one year. However, to the extent the loss trends and premium trends are not projected to the time period reflected by the year 2 and year 3 rate changes, the proposed rates may not reflect <u>all</u> expected costs for years 2 and 3. The expected costs for years 2 and 3 can be quantified by projecting the loss trends and premium trends to dates further in the future that correspond to years 2 and 3 and by comparing the resulting indicated rate changes to the rate changes included in this filing.

Q. Assuming that the provisions for profit, CAR, and NCOR are reasonable, what is your opinion on whether the proposed mobile homeowners MH(F) rates are not excessive, not inadequate, and not unfairly discriminatory?

A. If I assume that the provisions for profit, CAR, and NCOR are reasonable, then, in my opinion, the proposed mobile homeowners MH(F) rates in this filing are not excessive or unfairly discriminatory. However, to the extent the loss trends and premium trends are not projected to the time period reflected by the year 2 and year 3 rate changes, and to the extent the selected projection period trends remain appropriate for years 2 and 3, the proposed rates will be slightly inadequate at the time the year 2 and year 3 changes are implemented.

Q. Does this conclude your testimony?

A. Yes, it does.

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SUMMARY

Property & Casualty (P&C) actuary with more than 30 years of experience in actuarial applications and related fields including ratemaking, product development, predictive modeling, state pricing, field proposals, rate filings, actuarial and statistical research, classification analysis, data analytics, and economic modeling. Experienced in Private Passenger Automobile (including preferred, standard, and non-standard), Personal Property (including homeowners, renters, condominium owners, mobile home, and dwelling), other miscellaneous Personal Lines (including boats, motorcycles, recreational vehicles, and personal umbrella), and various Commercial Lines of Business. Has sound knowledge of product development, product pricing, product implementation, and project management for Personal Lines products. Has working knowledge of other key insurance functions including claims, corporate finance, marketing, reinsurance, sales, and underwriting. Has demonstrated the ability to lead and manage teams of employees to achieve desired business results in various capacities. Has unique combination of analytic ability, business intuition, project management, leadership, and communication skills.

EMPLOYMENT HISTORY

Milliman, Inc.   **2007 - Present**
Brookfield, Wisconsin

Principal and Consulting Actuary
Specialize in personal lines insurance company clients and predictive analytics of both personal and commercial lines of insurance. Experience has included ratemaking and pricing analyses for insurance companies, product development and implementation, classification analysis using multivariate statistical techniques, catastrophe reinsurance analysis, loss reserving, segmentation analysis to support sales and marketing initiatives, impact analysis of proposed state and federal legislation, and merger and acquisition analysis. Has also provided expert testimony to support Auto and Property regulatory issues.

Allstate Insurance Company   **1993 - 2007**
Northbrook, Illinois

Senior Manager – Auto & Property Pricing (2006-2007)
Oversaw and directed all personal lines Auto and Property pricing, rate filings, and other actuarial work related to the pricing function for 10 states accounting for over $4 billion of premium. Assisted in the oversight of all personal lines actuarial work related to the pricing function for an additional 12 states. Served as the primary department expert on all Property pricing initiatives. Directly managed a staff of 10 to 12 employees and participated in the leadership team that oversaw the management of a department with more than 130 employees.

Team Leader – Property & Specialty Lines Research (2005-2006)
Managed all research projects for personal lines Property and for Specialty Lines, all of which were completed using multivariate statistical analyses. Measured the impact of rating algorithm changes as they were implemented in various states. Oversaw the enhancement and improvement of analysis techniques used within the team. Led a team of 8 to 10 staff.

Research Manager (1999-2001, 2003-2005)
At different times, managed research teams for personal lines Auto, Economics & Modeling, and personal lines Property. Oversaw the development of countrywide pricing models based on multivariate statistical techniques, the evaluation of risk characteristics to be used as new rating elements, and the development of implementation tools to be used by pricing teams. Oversaw the development of Auto and Property economic models that measured the lifetime profitability of personal lines insurance customers. Led teams of staff ranging in size from 3 to 6 analysts.

Pricing Manager (1997-1999, 2001-2003)
Managed all personal lines Auto and Property pricing, rate filings, and other actuarial work related to the pricing function for California. Managed all personal lines Property pricing, rate filings, and other actuarial work related to the pricing function for 14 states including Alabama, Florida, Louisiana, and Mississippi. Led teams of staff ranging in size from 3 to 6 analysts.

Pricing Analyst, Research Analyst (1993-1997)
Produced rate proposals, rate filings, and quarterly rate-level indications for various states. Retrieved, manipulated, and analyzed large volumes of data to evaluate countrywide rating plans using multivariate statistical analyses.

EXPERT WITNESS EXPERIENCE

Pre-filed Expert Testimony – Various Private Passenger Automobile and Residential Property Insurance Rate Filings submitted by the North Carolina Rate Bureau
- *2024 Homeowners Insurance Filing*
- *2023 Dwelling Insurance Filing*
- *2023 Private Passenger Automobile Insurance Filing*
- *2022 Mobile Homeowners MH(C) Insurance Filing*
- *2022 Mobile Homeowners MH(F) Insurance Filing*
- *2022 Dwelling Insurance Filing*
- *2021 Mobile Homeowners MH(C) Insurance Filing*
- *2021 Mobile Homeowners MH(F) Insurance Filing*
- *2020 Dwelling Insurance Filing*
- *2020 Homeowners Insurance Filing*
- *2019 Dwelling Insurance Filing*
- *2019 Mobile Homeowners MH(C) Insurance Filing*
- *2019 Mobile Homeowners MH(F) Insurance Filing*
- *2019 Private Passenger Automobile Insurance Filing*
- *2018 Homeowners Insurance Filing*
- *2018 Dwelling Insurance Filing*
- *2017 Homeowners Insurance Filing*
- *2016 Dwelling Insurance Filing*

EDUCATION

BS in Actuarial Science from Drake University, Des Moines, Iowa

PROFESSIONAL QUALIFICATIONS

Certified Specialist in Predictive Analytics (CSPA), 2018
Fellow of the Casualty Actuarial Society (FCAS), 2002
Member of the American Academy of Actuaries (MAAA), 2002
Associate of the Casualty Actuarial Society (ACAS), 1998
Member of the Midwest Actuarial Forum, 1998

PROFESSIONAL ACTIVITIES

Volunteer Chairperson, CAS Crash Course Seminar Task Force, 2021 - Present
Member, CAS Volunteer Resources Task Force, 2021 - Present
Chairperson, CAS Crash Course in Vehicle Technology & Driverless Cars Committee, 2020 - 2021
Member, CAS Volunteer Resources Advisory Committee, 2020 - 2021
Member, CAS Participation Survey Task Force, 2018 - 2019
Member, Vehicle Technology & Impact on Loss Trends Planning Committee, 2017 - 2018
Member, iCAS Predictive Analytics Syllabus Committee, 2017 - 2018
Member, CAS Volunteer Resources Committee, 2013 - 2020
Member, CAS Volunteer Support Task Force, 2012 - 2013
Member, CAS Examination Committee, 2004 - 2006

PUBLICATIONS

"*Keep on trucking: COVID-19 and its impact on commercial auto*", Milliman Insight, April 2020.
"*PIP PIP hooray! The changing Michigan auto market*", Milliman Insight, April 2020.
"*Nowhere to drive: The impact of COVID-19 on the auto insurance industry*", Milliman Insight,
     March 2020.
"*Better Visibility: Predictive modeling helps to steady medical malpractice underwriting*", Best's Review,
     February 2008.

PRESENTATIONS

Numerous presentations at Casualty Actuarial Society (CAS) and other Property & Casualty insurance industry meetings and seminars from 2007 through the present with a focus on personal lines Auto and Property issues, as well as predictive analytics topics.

NORTH CAROLINA
MOBILE HOMEOWNERS INSURANCE

Estimated Impact of Delays in Rate Filing Process

NCRB Rate Filing	Policy Type / Coverage	Premium Weight	(1) Assumed Effective Date	(2) Actual Effective Date	(3) # of Months of Delay	(4) Selected Loss Trend	(5) Selected Premium Trend	(6) Estimated Impact of Delay in Filing Process
2022 MH(C)	Mobile Home Structures	$64,510,959	7/1/23	10/1/23	3	12.0%	3.2%	2.1%
	Adjacent Structures	5,337,948	7/1/23	10/1/23	3	6.0%	5.0%	0.2%
	Personal Effects	11,872,318	7/1/23	10/1/23	3	2.8%	4.8%	-0.5%
	Liability	2,467,108	7/1/23	10/1/23	3	8.0%	1.0%	1.7%
	Total	$84,188,333						1.6%
2022 MH(F)	Owners	$47,454,596	7/1/23	10/1/23	3	9.0%	3.8%	1.2%
	Tenants	114,906	7/1/23	10/1/23	3	2.8%	1.2%	0.4%
	Total	$47,569,502						1.2%
2022 Dwelling	Fire	$71,710,360	2/1/23	6/1/23	4	6.5%	5.0%	0.5%
	EC	246,871,993	2/1/23	6/1/23	4	7.0%	5.0%	0.6%
	Total	$318,582,353						0.6%
2020 HO	Owners	$2,161,073,789	8/1/21	6/1/22	10	6.0%	1.1%	4.0%
	Tenants	76,318,464	8/1/21	6/1/22	10	0.5%	-2.0%	2.1%
	Condos	31,251,398	8/1/21	6/1/22	10	5.0%	0.0%	4.1%
	Total	$2,268,643,651						4.0%
2021 MH(C)	Mobile Home Structures	$55,402,780	11/1/21	5/1/22	6	-2.0%	2.7%	-2.3%
	Adjacent Structures	4,435,898	11/1/21	5/1/22	6	10.2%	4.4%	2.7%
	Personal Effects	10,600,963	11/1/21	5/1/22	6	-2.0%	4.4%	-3.1%
	Liability	2,198,331	11/1/21	5/1/22	6	8.0%	0.7%	3.5%
	Total	$72,637,972						-1.9%
2021 MH(F)	Owners	$41,984,133	11/1/21	5/1/22	6	1.0%	2.7%	-0.8%
	Tenants	95,516	11/1/21	5/1/22	6	-2.0%	1.0%	-1.5%
	Total	$42,079,649						-0.8%
2020 Dwelling	Fire	$71,555,474	9/1/21	11/1/21	2	0.0%	1.2%	-0.2%
	EC	229,061,439	9/1/21	11/1/21	2	9.0%	1.5%	1.2%
	Total	$300,616,913						0.9%
2019 Dwelling	Fire	$83,923,771	7/1/20	7/1/20	0	2.0%	1.1%	0.0%
	EC	241,506,295	7/1/20	7/1/20	0	3.2%	0.8%	0.0%
	Total	$325,430,066						0.0%
2019 MH(C)	Mobile Home Structures	$52,069,226	2/1/20	6/1/20	4	3.5%	1.6%	0.6%
	Adjacent Structures	4,212,665	2/1/20	6/1/20	4	4.0%	2.8%	0.4%
	Personal Effects	10,255,303	2/1/20	6/1/20	4	2.0%	4.1%	-0.7%
	Liability	2,410,058	2/1/20	6/1/20	4	5.0%	n/a	1.6%
	Total	$68,947,252						0.5%
2019 MH(F)	Owners	$51,661,941	2/1/20	6/1/20	4	0.7%	-0.5%	0.4%
	Tenants	66,881	2/1/20	6/1/20	4	2.0%	2.1%	0.0%
	Total	$51,728,822						0.4%
2018 HO	Owners	$2,017,285,314	10/1/19	5/1/20	7	4.6%	1.0%	2.0%
	Tenants	72,370,871	10/1/19	5/1/20	7	-3.1%	-1.4%	-1.0%
	Condos	29,047,171	10/1/19	5/1/20	7	1.9%	0.2%	1.0%
	Total	$2,118,703,356						1.9%
2018 Dwelling	Fire	$102,088,428	6/1/18	2/1/19	8	0.2%	2.3%	-1.3%
	EC	187,663,877	6/1/18	2/1/19	8	0.4%	2.1%	-1.1%
	Total	$289,752,305						-1.2%
2017 HO	Owners	$2,010,516,565	6/1/18	10/1/18	4	3.1%	1.1%	0.7%
	Tenants	62,551,401	6/1/18	10/1/18	4	-3.1%	-1.0%	-0.7%
	Condos	24,591,783	6/1/18	10/1/18	4	1.9%	0.5%	0.5%
	Total	$2,097,659,749						0.6%
2014 HO	Owners	$2,257,970,589	7/1/14	6/1/15	11	5.3%	2.3%	2.7%
	Tenants	45,065,871	7/1/14	6/1/15	11	2.9%	-1.0%	3.6%
	Condos	22,629,842	7/1/14	6/1/15	11	5.4%	0.0%	5.0%
	Total	$2,325,666,302						2.7%

NORTH CAROLINA
MOBILE HOMEOWNERS INSURANCE

Estimated Impact of Delays in Rate Filing Process

NCRB Rate Filing	Policy Type / Coverage	Premium Weight	(1) Assumed Effective Date	(2) Actual Effective Date	(3) # of Months of Delay	(4) Selected Loss Trend	(5) Selected Premium Trend	(6) Estimated Impact of Delay in Filing Process
2014 MH(C)	Property	$77,349,418	6/1/15	10/1/15	4	3.0%	2.8%	0.1%
	Liability	1,546,804	6/1/15	10/1/15	4	2.8%	n/a	0.9%
	Total	$78,896,222						0.1%
2014 MH(F)	Owners	$44,750,216	6/1/15	10/1/15	4	4.6%	2.2%	0.8%
	Tenants	100,658	6/1/15	10/1/15	4	2.5%	-0.2%	0.9%
	Total	$44,850,874						0.8%
2012 HO	Owners	$2,168,814,729	6/1/13	7/1/13	1	5.4%	3.0%	0.2%
	Tenants	32,405,190	6/1/13	7/1/13	1	4.0%	0.0%	0.3%
	Condos	18,252,996	6/1/13	7/1/13	1	4.0%	2.0%	0.2%
	Total	$2,219,472,915						0.2%
2011 Dwelling	Fire	$84,664,174	6/1/11	4/1/13	22	3.6%	2.9%	1.3%
	EC	150,823,062	6/1/11	4/1/13	22	4.1%	2.8%	2.3%
	Total	$235,487,236						2.0%
2008 HO	Owners	$1,498,766,325	1/1/09	5/1/09	4	4.4%	3.9%	0.2%
	Tenants	24,074,875	1/1/09	5/1/09	4	0.2%	2.7%	-0.8%
	Condos	13,213,524	1/1/09	5/1/09	4	0.2%	2.9%	-0.9%
	Total	$1,536,054,724						0.1%
2008 MH(C)	Property	$76,284,985	10/1/07	12/1/08	14	7.5%	2.4%	5.9%
	Liability	1,161,840	10/1/07	12/1/08	14	4.0%	n/a	4.7%
	Total	$77,446,825						5.9%
2008 MH(F)	Owners	$43,659,180	10/1/07	12/1/08	14	6.6%	5.8%	0.9%
	Tenants	158,638	10/1/07	12/1/08	14	0.4%	-4.1%	5.5%
	Total	$43,817,818						0.9%

Average Estimated Impact of Delays in Filing Process: **1.0%**

(1), (4), (5) From historical NCRB rate filings
(2) From historical NCRB settlement agreements or circulars
(6) = {[1 + (4)] / [1 + (5)]} ^ {[(2) - (1)]/365} - 1

1 **PRE-FILED DIRECT TESTIMONY OF MINCHONG MAO**

2

3 **2024 MOBILE HOMEOWNERS INSURANCE RATE FILINGS**

4 **by the**

5 **NORTH CAROLINA RATE BUREAU**

6

7

8 **Q. Please state your full name and business address for the record.**

9

10 A. My name is Minchong Mao. My business address is Aon, 200 East Randolph

11 Street, 11th Floor, Chicago, Illinois 60601.

12

13 **Q. What is your involvement in this matter?**

14

15 A. My employer, Aon, has been retained by the North Carolina Rate Bureau

16 (NCRB) to provide catastrophe modeling and reinsurance analytics with respect

17 to the expected hurricane losses, net cost of reinsurance provisions, and

18 compensation for assessment risk utilized in the NCRB 2024 Mobile

19 Homeowners Insurance MH(C) and MH(F) rate filings. I manage the catastrophe

20 analytics team at Aon that performs these services.

21

22 **Q. What is Aon?**

23 A. Aon is a leading global professional services firm that provides advice and

24 solutions to clients focused on risk, retirement, and health. Aon is one of the

1   world's largest reinsurance brokers and has extensive experience in catastrophe

2   modeling.

3

4   **Q. What are your primary responsibilities for Aon?**

5

6   A. I am a Senior Managing Director and a Catastrophe Actuary at Aon's

7   Reinsurance Solutions - Catastrophe Risk Analytics group. I manage an analytics

8   group within the Catastrophe Management area that focuses on catastrophe

9   actuarial and predictive analytics as it relates to ratemaking and underwriting.

10   I advise clients on catastrophe actuarial services, such as rate indications, rate

11   filing strategy, underwriting strategy, and use of catastrophe models in risk

12   management. I am responsible for Aon's compliance with ASOP 38 regarding

13   use of catastrophe models. I am a consulting actuary for Aon's in-house model,

14   Impact Forecasting, LLC. I work with a group of catastrophe modelers to provide

15   catastrophe modeling support for reinsurance placements. Our client services

16   include but are not limited to: support for multi-model analytics, customized view

17   of risks, catastrophe pricing, catastrophe risk selections, data augmentation,

18   model evaluation, real-time event response, portfolio optimization, actuarial

19   support, reinsurance cost allocations, and rating agency questionnaire support.

20

21   **Q. Describe your professional and educational background.**

22

23   A. I have been with Aon since September 2018. Prior to joining Aon, I worked at

24   State Farm Insurance Companies for over 17 years from 2001 to 2018 where I

1   led the catastrophe modeling functions since 2005. During my tenure at State

2   Farm, I was responsible for State Farm's use of catastrophe models in pricing,

3   underwriting, claims, reinsurance, securitization, enterprise risk management,

4   and rating agency reporting.

5

6

7   I had 2 years of ratemaking experience as a pricing actuary for Homeowner lines

8   at State Farm. I am familiar with the development and implementation of

9   property insurance rates and rules. I understand the challenges for an insurer to

10 balance rate adequacy and competitiveness and to meet financial objectives at

11 the same time.

12

13 I have a Bachelor's degree in Biochemical Engineering from Beijing University of

14 Chemical Technology, a Master's degree in Chemistry from Eastern Illinois

15 University, and a Master's degree in Computer Science from the University of

16 Missouri - Columbia.

17

18 **Q. Are you a member of any professional actuarial organizations?**

19

20 A. Yes. I am a Fellow of the Casualty Actuarial Society (FCAS) and a Member of

21 the American Academy of Actuaries (MAAA). I am a Certified Catastrophe Risk

22 Management Professional (CCRMP), a new designation created by the CAS

23 Institute (iCAS) and International Society of Catastrophe Managers (ISCM). I am

1   currently serving on the Casualty Actuarial Society's Climate Change Committee

2   and on the advisory board for CCRMP designation. I served on the American

3   Academy of Actuaries' Extreme Event Risk Committee and on the advisory board

4   for CCRMP designation from 2016 to 2023. I am in good standing with the

5   requirements of all of these organizations.

6

7   I was part of a working group that authored the following monographs for the

8   American Academy of Actuaries:

9   •   The National Flood Insurance Program: Challenges and Solutions (2017)

10 •   Uses of Catastrophe Model Output (2018)

11 •   Wildfire: An Issue Paper - Lessons Learned from the 2017–2018

12   California Events (2019)

13 I am one of the recipients of the Casualty Actuarial Society's Above and Beyond

14 Achievement Award in 2019 to recognize my leadership and contributions in

15 establishing the CCRMP designation for the insurance industry.

16

17 **Q. Please describe your relevant experience and qualifications for this**

18 **proceeding.**

19

20 A. My CV is included with the filing as Exhibit RB-9. I started practicing in the

21 catastrophe risk management field in 2005. During my tenure at State Farm, I

22 managed State Farm's catastrophe modeling function from 2005 to 2018. I

23 managed vendor relationships with AIR, EQECAT, ARA, and RMS. I provided

1 filing support and helped my employer through many regulatory challenges

2 related to the use of models in insurance operations. I provided actuarial

3 opinions on State Farm's use of catastrophe models. I established the due

4 diligence and model validation framework to ensure catastrophe modeling

5 practices at State Farm met the actuarial standards and complied with laws and

6 regulatory requirements. My team provided various catastrophe risk measures

7 and analytics for State Farm Fire and affiliates for ratemaking, exposure

8 management, claims, ERM, rating agency reporting, reinsurance and

9 securitization purposes.

10

11 From 2010 to 2013, I was a member of an advisory group to the Insurance

12 Bureau of Canada (IBC) and the Office of the Superintendent of Financial

13 Institutions (OSFI) to provide expert opinions on insurance and the economic

14 impact of major earthquakes in Canada. From 2011 to 2013, I was a member of

15 an advisory group for IBC and OSFI to revise OSFI Guideline B-9 (Earthquake

16 Exposure Management Sound Practice Guideline for insurance companies). I

17 led a State Farm team to establish the compliance framework to meet OSFI B-9

18 regulation requirements.

19

20 In January 2015, I was appointed by Florida CFO Jeff Atwater to serve on the

21 Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) as

22 the industry actuary. From January 2015 to September 2018, I represented the

23 property insurance industry on the FCHLPM to review and accept hurricane

1   models for use in ratemaking in the State of Florida. My term on the FCHLPM

2   ended in September 2018 due to my job change.

3

4   **Q. What does the FCHLPM do?**

5

6   A. FCHLPM scrutinizes hurricane models and authorizes their use in Florida rate

7   filings and has done so over many years. FCHLPM retains experts in relevant

8   fields who review the meteorological, wind engineering, damageability, claims,

9   statistical, computer programming, economic and other aspects of modeling in

10   great detail. Over the years, FCHLPM has recognized advancements in various

11   scientific disciplines related to hurricane modeling and has required modelers to

12   incorporate such advancements. FCHLPM approves only those models that

13   meet its rigorous standards.

14

15   **Q. Are the hurricane models used in these filings certified by the FCHLPM?**

16

17   A. Yes. The hurricane models used for these rate filings, Verisk (also known as

18   and hereinafter referred to as "AIR") Touchstone V10 (a.k.a Touchstone 2022)

19   and RMS RiskLink V23, are both certified by FCHLPM.

20

21   **Q. Please describe how ASOP 38 is applicable in these rate filings?**

22

23   A. The Actuarial Standard of Practice Number 38 (ASOP 38, included as Exhibit

24   RB-11) has been in effect since December 2000. ASOP 38 was created, to

1   some extent, to address the use of stochastic computer hurricane simulation

2   models in the insurance ratemaking process. ASOP 38 established certain

3   requirements for actuaries who use output from a model that is outside of that

4   actuary's area of expertise. Hurricane models are developed by a group of

5   experts including meteorologists, structural engineers, actuaries, statisticians,

6   and computer scientists. Some model components are outside of the area of

7   expertise of actuaries. Due to the models' complexity and reliance on different

8   science disciplines, as well as their relative novelty in establishing property

9   insurance rates at the time, many actuaries are not as knowledgeable about

10   these models as they are about the traditional ratemaking methodologies.

11

12   Hurricane models are utilized to establish the hurricane loss costs and

13   reinsurance cost allocations for these NCRB filings. Therefore, compliance with

14   ASOP 38 is relevant to these filings.

15

16   **Q. Is Aon's use of catastrophe models in compliance with ASOP 38?**

17

18   A. Yes. Aon's catastrophe modeling practice in general and as it relates to these

19   NCRB filings is in compliance with ASOP 38. ASOP 38 provides guidance to the

20   actuary in using models that incorporate specialized knowledge outside the

21   actuary's own areas of expertise when developing an actuarial work product and

22   has been included as Exhibit RB-11. When using such a model, the standard

23   requires that the actuary perform five specific tasks:

1

2   a. Determine the appropriate level of reliance on experts;

3   b. Have a basic understanding of the catastrophe model;

4   c. Evaluate whether the catastrophe model is appropriate for the intended

5   purpose;

6   d. Determine that appropriate validation of the catastrophe model and output has

7   occurred; and

8   e. Determine the appropriate use of the catastrophe model and output.

9

10 In addition to relying on vendors' experts, Aon has an in-house model evaluation

11 team. This team consists of members with advanced degrees in meteorology,

12 structural engineering, and statistics. Soon after models are released, the model

13 evaluation team performs sensitivity testing to identify key drivers of model

14 changes and potential anomalies. I work closely with the model evaluation team

15 at Aon to ensure the sensitivity testing covers all aspects of ASOP 38

16 requirements. I review the testing results through an analytics dashboard. I

17 document my reviews for each peril model. Upon completion of the review, I sign

18 an ASOP 38 attestation. Copies of the current ASOP 38 attestations for the AIR

19 and RMS models are included in these filings as Exhibits RB-12 and RB-13,

20 respectively.

21

1 **Q. Describe the role of Aon Reinsurance Solutions Analytics and**

2 **Catastrophe Risk Analytics.**

3

4 A. Aon Reinsurance Solutions Analytics (a.k.a Reinsurance Analytics) provides

5 consultative services to Aon's clients who place catastrophe reinsurance through

6 Aon. These clients are primary insurers selling property insurance products in

7 catastrophe prone areas. Aon Reinsurance Analytics provides value-added

8 service that is above and beyond reinsurance brokering transactions. Our client

9 services include but are not limited to support for multi-model analytics,

10 customized view of risks, catastrophe pricing, catastrophe risk selections, data

11 augmentation, model evaluation, real-time event response, portfolio optimization,

12 reinsurance cost allocations, actuarial support, and rating agency questionnaire

13 support.

14

15 Within the Reinsurance Analytics division, there is a team specialized in

16 catastrophe risk analytics. I am part of the catastrophe risk analytics team that

17 provides clients with catastrophe risk management information and assists

18 clients with their reinsurance purchasing decisions.

19

20 **Q. Describe your experience with catastrophe models.**

21

22 A. As I noted earlier, for much of my tenure at State Farm, I led the catastrophe

23 modeling functions and was responsible for the company's use of catastrophe

24 models in pricing, underwriting, claims, reinsurance, securitization, enterprise risk

1   management, and rating agency reporting. From 2005 to 2006, I performed the

2   catastrophe modeling analyst's role at State Farm, which includes hands-on

3   experience with multiple models - from data preparation to running the models to

4   post model aggregation. My daily work involved data preparation and converting

5   exposure data into model input files. I gained knowledge about how different

6   models handle building characteristics and insurance terms. I used RMS, AIR,

7   and EQECAT models on a daily basis. I developed an understanding of the

8   models' back-end database and output. I performed post-model analysis and

9   wrote computer programs to develop risk metrics such as probable maximum

10   loss (PMLs), average annual losses (AALs), and total value at risk (TVaR) to help

11   State Farm assess and manage catastrophe risks. Later in my career, I

12   assembled a team and supervised many modeling tasks delegated to my

13   colleagues. I continued to provide guidance and managed the day-to-day work

14   of the catastrophe modeling unit. At Aon, I have continued to work extensively

15   with catastrophe models, as I indicated earlier, because the models are integral

16   to the work of Aon's Reinsurance Solutions – Catastrophe Risk Analytics group.

17

18   **Q. Describe your experience with catastrophe reinsurance.**

19

20   A. My experience with reinsurance started in 2005 at State Farm. State Farm is

21   a reinsurance buyer, and I was a part of the company's reinsurance buying team.

22   I supported the reinsurance function at multiple levels. My work included using

23   catastrophe model output and financial information to help my employer in

24   structuring reinsurance, conducting technical pricing, drafting and reviewing

1   reinsurance contracts, and participating in reinsurance buying trips. I evaluated

2   catastrophe risks and cost of capital for both ceding and assuming parties. I

3   worked closely with our reinsurance broker to validate our view of risks using

4   external benchmarks. At Aon, I work directly with our clients who are seeking to

5   purchase catastrophe reinsurance. Output from models is used by our brokers,

6   clients, and capital markets to determine the reinsurance structure and pricing.

7   We customize reinsurance solutions based on clients' risk appetite and risk

8   profile.

9

10   **Q. Do you speak on topics pertaining to catastrophe modeling?**

11

12   A. Yes. I have presented at CAS Ratemaking, Product and Modeling

13   Conferences. I am a frequent speaker at the Reinsurance Association of

14   America's annual catastrophe modeling conference. My topics have included

15   model blending, model regulation, and wildfire modeling, among others. From

16   2012 to present, I have been a visiting instructor at the Illinois State University

17   Math Department Actuarial Science program where I present catastrophe

18   modeling and regulatory topics to actuarial students. From 2016 to 2018, I was a

19   member of the planning committee for the Reinsurance Association of America's

20   annual catastrophe modeling conference. I organized and moderated panels

21   and engaged speakers to cover a variety of catastrophe topics.

22

23   **Q. Would you please explain why you are providing this testimony?**

24

1 A. I manage Aon's Catastrophe Actuarial and Predictive Analytics group that

2 developed the provisions for the modeled hurricane losses, the net cost of

3 reinsurance, and the compensation for assessment risk used in these filings. I

4 am responsible for the work products provided to NCRB on those items for these

5 filings.

6

7 **Q. What was Aon's role in these filings with respect to expected hurricane**
8 **losses?**

9

10 A. Using exposure data provided to Aon by NCRB, Aon performed data

11 validation and shared control totals with NCRB; Aon's catastrophe modelers ran

12 the AIR Touchstone V10 (a.k.a Touchstone V2022) and RMS RiskLink V23

13 models based on the validated exposure data; Aon blended the model results for

14 NCRB based on well-established methodology and provided the modeled

15 average annual loss to NCRB; Aon conducted industry research and

16 recommended and applied catastrophe loss adjustment factors for NCRB.

17

18 Let me add that the storm surge components of the models were included for

19 these filings. This is appropriate because the Mobile Homeowners MH(C) and

20 MH(F) programs provide insurance coverage for the flood peril.

21

22 **Q. Are catastrophe simulation models commonly used by insurers for**
23 **ratemaking in catastrophe-exposed lines and jurisdictions?**

24

1 A. Yes, catastrophe models have become the standard method of estimating

2 catastrophe risk in rate filings and reinsurance. Hurricane losses are so extreme

3 and volatile that, for many years now, the accepted actuarial procedure for

4 estimating catastrophe risk in rate filings and in the reinsurance market has been

5 through the use of catastrophe models rather than the use of actual hurricane

6 losses. Such volatility is greatly compounded in hurricane prone states such as

7 North Carolina. In North Carolina and other hurricane prone states, a significant

8 percentage of the prospective long-term average annual losses in certain

9 territories of the state are caused by intense hurricanes, which are relatively

10 infrequent but are devastating when they do occur. It would be actuarially

11 unsound to rely on a few years of actual hurricane losses to estimate prospective

12 hurricane losses because of the volatility of these losses, which is driven by low

13 frequency and high severity. We have provided data and analysis from the use

14 of catastrophe models for Aon clients to use in their rate filings in multiple states.

15

16 **Q. Did the NCRB ask Aon to run the AIR and RMs models?**

17

18 A. Yes. Aon ran AIR Touchstone and RMS RiskLink for the NCRB under the

19 NCRB's direction. AIR and RMS are the most commonly used catastrophe

20 models in the insurance and reinsurance industries. Aon runs these two models

21 on all of Aon clients' exposure data pertinent to reinsurance transactions. The

22 majority of Aon's clients use either one or both of these two models when

23 evaluating their catastrophe risk.

24

1 **Q. Why did the NCRB ask Aon to run two models?**

2

3 A. My understanding is that the NCRB has been using two models since 2016.

4 Running two models also complies with N.C.G.S. 58-36-10(3), which became

5 effective in 2017 and requires the NCRB to present data from more than one

6 model if modeled hurricane losses are based upon a commercial hurricane

7 simulation model.

8

9 **Q. How are losses from the two models blended?**

10

11 A. We run the individual models independently and determine the appropriate

12 loss costs and reinsurance cost allocation for each model. The blended results

13 from the two models are derived by taking the straight average, thus weighting

14 the models equally.

15

16 **Q. Is it common that modeled losses will differ between the various model**

17 **vendors?**

18

19 A. Yes. Catastrophe models are complex. When modeling vendors develop a

20 hurricane model, they start with similar underlying information, such as the

21 National Hurricane Center's historical hurricane dataset, land use/land cover

22 database, similar wind engineering principles and statistical theories. However,

23 there are differences between modeling vendors in their approaches to

24 interpreting and supplementing the data to build a robust model. Different

1   assumptions and judgments are made by model developers. Vendors may also

2   use claims data from different data sources to calibrate their model. These

3   varying assumptions, judgments, and methodologies will result in different model

4   results. Model results deviate more at location level than at the state level.

5   When models generate different results, it does not necessarily mean any model

6   is wrong. The spread among different views of the same risk reflects the

7   inherent uncertainties of catastrophe modeling.

8

9   Given the number of variables involved in the development of a catastrophe

10   model and the degree of uncertainty associated with each variable, we would not

11   expect that two independently developed models would generate the same

12   output or conclusions on a given set of data.

13

14   **Q. Does the use of catastrophe models produce artificially high rate levels?**

15

16   A. No. Models help stabilize rate levels. Without modeling, rate levels would

17   fluctuate wildly following the occurrence or non-occurrence of significant

18   hurricanes. Modeling is relied upon by all stakeholders in insurance,

19   reinsurance, catastrophe bond, and other financial transactions to give the best

20   and most unbiased projection of future hurricane losses. Different parties to

21   those transactions often have opposing economic interests, but they all rely on

22   models in their negotiations with each other.

23

1   **Q. How do the models change over time?**

2

3   A. Catastrophe models are built based on state-of-the-art science and

4   technology. As science continues to evolve and computing powers continue to

5   advance, modeling technology is updated and improved. In addition, research

6   into historical and recent events, updates to building practices and building

7   codes, and data from engineering experiments also provide insights to enable

8   model developers to enhance their models. Each modeling vendor takes a

9   different approach on how frequently it updates its models and which perils and

10 regions will be updated. As noted above, because different assumptions and

11 judgements are made when information is applied, the impact of an update could

12 vary greatly between models. Changes due to model updates are to be

13 expected.

14

15 **Q. Is using multiple models to determine catastrophe risk actuarially**

16 **sound?**

17

18 A. Yes. Using multiple models allows users to incorporate different views of risk

19 into their exposure management. Using multiple models can effectively mitigate

20 modeling volatility and smooth out significant model changes. Using multiple

21 models is a practice endorsed by major rating agencies such as AM Best and

22 S&P.

23

24 **Q. How does the NCRB exposure data impact model output?**

25

1 A. The following data factors would impact model output:

2 • Changes in coverage and/or policy conditions such as deductible and

3 limits, and the number of underlying policies-in-force

4 • Changes in portfolio composition, such as geographic concentration

5 • Changes in building characteristics, such as loss mitigation features and

6 age of roof

7 • Changes in data quality, such as replacing unknown building

8 characteristics with known building characteristics

9

10 **Q. Please describe the client data that was employed as input for the model**

11 **runs?**

12

13 A. The underlying exposure data was provided to Aon by the NCRB. To the best

14 of my knowledge, the data was compiled on behalf of the NCRB by Milliman, Inc.

15 NCRB's exposure data sent to Aon consisted of the aggregate exposure

16 information for all residential Mobile Home risks in North Carolina at program, zip

17 code, county and territory levels. Data with invalid zip codes or county

18 designations was disaggregated and reassigned to valid zip codes/counties

19 within the given territory using mobile home unit count by CBG (census block

20 group) from the 2020 American Community Survey maintained by the United

21 States Census Bureau. Territory was populated, except for data that was part of

22 zip codes split across two territories, and the exposure in the split zip code was

23 proportionally assigned to territories based on mobile home unit count by CBG.

24 The number of risks was derived from accrued earned exposures with partial

1   numbers. Any partial numbers of risk count that were greater than zero were

2   rounded to at least 1 because the models require the number of risks to be input

3   as an integer. Rounding up resulted in a slight increase in the risk count.

4   Exposure data provided to Aon was already trended by Milliman. NCRB

5   instructed Aon to run the models using the aggregate data at zip code and

6   territory levels for the entire North Carolina portfolio in a single model run. Model

7   results were aggregated at the territory level.

8

9

10   **Q. Please describe what Aon Reinsurance Solutions then did with the data**
11   **provided by the NCRB.**

12

13   A. We reviewed the data received from the NCRB for completeness and

14   reasonableness before we input it into the AIR and RMS models. Since the two

15   models have different formats for inputting data, we worked with the NCRB to

16   assure that the exposure data was properly and consistently mapped in the

17   required format for each model. NCRB provided earned insurance years (EIY),

18   which is the sum of primary coverage amount expressed in thousands, and

19   earned house years (EHY), which is the number of risks. Limit by coverage is

20   calculated from EIY and EHY as instructed by the NCRB. A comparison of the

21   data in these filings with the data in the last Mobile Homeowners filings was

22   conducted. Any anomalies were investigated.

23

1   The next step was to input the data and run the models. We ran the AIR

2   Standard model using the 100K event catalogue and the RMS Historical model

3   (both are long-term views of the hurricane risk) to determine the modeled

4   hurricane loss cost. We also ran the AIR Warm Sea Surface Temperature

5   (WSST) model using the 10K event catalogue and the RMS Medium Term Rate

6   model (both are near-term views of hurricane risk) to analyze the cost of

7   reinsurance. It is a standard practice throughout the reinsurance industry to rely

8   upon the models we used to determine modeled hurricane loss cost and

9   reinsurance placements, and this has been true since the 1990s.

10

11   After the models were run, we reviewed each model's output separately to

12   ensure data integrity. We then blended the results of the two models by taking a

13   straight average of the results. Additional reviews were conducted of the

14   blended results to ensure that the blending procedures were correctly performed

15   and that the blended results were reasonable. Model results were aggregated by

16   territory, policy form, and coverage. The blended modeled hurricane loss results

17   were provided to the NCRB for use in its Mobile Homeowners rate review. The

18   NCRB Mobile Homeowners rate review includes separate filings for MH(C) and

19   MH(F), and the model results were utilized for both filings. At the NCRB's

20   request, we also provided the results to Milliman for its use in its work as part of

21   the NCRB's Mobile Homeowners MH(C) and MH(F) rate reviews. Exhibit RB-10

22   sets forth the blended modeled hurricane losses resulting from the work I have

23   described. Based on my knowledge and experience, and the input data provided

1 by the NCRB, these modeled hurricane losses are reasonable and appropriate

2 projections of expected hurricane losses for use by the NCRB in its Mobile

3 Homeowners rate reviews and rate filings for MH(C) and MH(F).

4

5 Also, we employed the modeled hurricane losses as part of our work in

6 determining and allocating the cost of reinsurance for these rate reviews and rate

7 filings.

8

9 **Q. What are the differences and similarities between using the AIR**

10 **Touchstone's 10K event set and the 100K event set?**

11

12 A. AIR Touchstone's 10K hurricane event set is a subset of the 100K event set.

13 These two event sets are designed to have the same theoretical frequency and

14 intensity distributions in coastal segments, and to produce similar results with

15 minimal variability. Using the 10K event set provides benefits in performance and

16 storage. AIR Touchstone's 10K event set is standard for use in a majority of

17 catastrophe modeling exercises – including reinsurance renewal data distribution

18 for quoting and placement purposes. The 100K event set is used to determine

19 hurricane loss costs for ratemaking purposes.

20

21 **Q. Did Aon adjust the modeled results?**

22

1 A. Yes. A 6% catastrophe loss adjustment expense (LAE) factor was applied to

2 modeled losses. This factor was recommended by Aon based on a broad

3 industry study at the state level. The results of that study are shown in Exhibit

4 RB-16. The application of the LAE factor was reviewed and approved by the

5 NCRB, and the 6% catastrophe LAE factor was selected by the NCRB.

6

7 **Q. What is demand surge?**

8

9 A. Demand surge is a social economic phenomenon defined by the Actuarial

10 Standards Board as "a sudden and usually temporary increase in the cost of

11 materials, services and labor due to the increased demand for them following a

12 catastrophe." Demand surge usually occurs after large-scale disasters such as

13 earthquakes, tsunamis, cyclones, or flooding. The models incorporate demand

14 surge into their loss estimates.

15

16 **Q. Should model output in the NCRB filings for MH(C) and MH(F) include**

17 **demand surge?**

18

19 A. Yes. All applications of catastrophe model output should reflect demand

20 surge. Demand surge is a real social economic phenomenon. There is no

21 reason to underestimate the impact of large events by ignoring the increase in

22 demand for labor and materials as a result of those events. In our experience,

23 the vast majority of insurance companies run the models with demand surge. In

1 fact, the only times we have ever run a model without demand surge at Aon are

2 to measure the impact of demand surge for testing purposes and where

3 specifically requested. Insurance companies' claims experience includes the

4 effect of demand surge. Excluding demand surge would underestimate

5 catastrophe losses.

6

7 **Q. Does the model output for the NCRB MH(C) and MH(F) filings include**

8 **demand surge?**

9

10 A. Yes. As is the customary and accepted practice in the insurance, reinsurance,

11 and catastrophe bond industries, the models were run with aggregate demand

12 surge (AIR) and loss amplification (RMS) included. The FCHLPM has approved

13 the use of aggregate demand surge and loss amplification for the AIR and RMS

14 models, respectively. These aspects of the models account for the expected

15 additional cost for supplies and labor if a very large hurricane event or series of

16 events occurs. Experience demonstrates that when such catastrophic events

17 have occurred, there is significant increase in demand for the limited supply of

18 plywood, shingles, labor, hotel rooms, and other necessities. The high demand

19 for specialized labor often requires contractors to come in from out of state.

20 Fundamental economic principles dictate that such a spike in demand increases

21 prices, and, consequently, results in larger than normal claims payments in the

22 aggregate. Additionally, there are delays in repairing properties, which can

23 directly lead to longer stays in hotels, and there are other increased costs beyond

1   those that occur after smaller hurricanes. Loss amplification also factors in

2   claims inflation. Claims adjusters may not investigate every claim if it is under a

3   certain threshold, given the volume of claims they have to settle post-event in a

4   limited amount of time.

5

6   **Q. Does any state prohibit the inclusion of demand surge in modeled**

7   **losses for rate filings?**

8

9   A. I am not aware of any prohibitions against the use of demand surge in rate

10 filings in any jurisdiction. The South Carolina Department of Insurance Bulletin

11 2014-03 states "Demand surge may be included in the modeled results as long

12 as the company provides the impact it has on the modeled losses." The Florida

13 Commission on Hurricane Loss Projection Methodologies' actuarial standards

14 require hurricane models to incorporate demand surge based on relevant data

15 and actuarially sound methods and assumptions.

16

17 **Q. North Carolina has laws prohibiting "price gouging" following a**

18 **hurricane. Does that eliminate demand surge?**

19

20 A. No. Florida has a similar law (Fla. Stat. § Title XXXIII 501.160). Demand

21 surge can and does occur due to supply and demand economics in situations

22 that would not be considered price gouging and/or that would not be prevented

23 by statutes prohibiting price gouging.

24

1 **Q. Does it make sense for North Carolina hurricane losses to include**

2 **demand surge for very large events impacting other states even if those**

3 **events were less significant in North Carolina?**

4

5 A. Yes, the intent of the model is to reflect economic conditions that will influence

6 construction prices and other aspects of insured losses (such as, for example,

7 the increased period of time a carrier has to pay for hotel rooms for insureds

8 while their damaged homes are repaired) in the time period shortly after a

9 catastrophe event occurs. Since labor and material resources are exchanged by

10 people across state lines, we believe the demand surge effect on prices in other

11 states will have an effect in North Carolina and therefore should be considered.

12

13

14 **Q. Is the net cost of reinsurance considered in the Filings?**

15

16 A. Yes. Large catastrophe losses present a very real risk to the long-term viability

17 of Mobile Homeowners insurers and their ability to follow through on their

18 promise to policyholders to pay losses when they occur. There are numerous

19 scenarios where the potential losses due to a single hurricane are far greater

20 than the total annual premium collected by all the companies for the entire state

21 of North Carolina. To remain viable long-term and to protect against insolvency,

22 and thereby to keep their commitment to policyholders, the industry must

23 purchase reinsurance to help cover this risk. The costs associated with such

24 reinsurance are costs of doing business in the state. To reflect the portion of

1 those costs that is not already covered in the MH(C) and MH(F) filings, a

2 provision for the net cost of reinsurance is included in both filings.

3

4 **Q. What is reinsurance?**

5

6 A. Simply, reinsurance is insurance for insurers. When insurers are aware of

7 scenarios in which the potential losses are greater than the company is willing to

8 tolerate or able to absorb, they will frequently purchase reinsurance to mitigate

9 the risk in those situations. Additionally, insurers may issue catastrophe bonds to

10 protect themselves in those situations. Essentially the insurers will use a portion

11 of the premium to purchase reinsurance. This is common across the industry.

12

13 **Q. What was your role in these filings with respect to net cost of**

14 **reinsurance?**

15

16 A. I worked with my colleagues within the Aon Catastrophe Actuarial team to

17 determine a suitable provision for the net cost of reinsurance for the state overall

18 and an allocation of that cost by territory. The net cost of reinsurance provision

19 used exposure data from all the Mobile Home risks in the state, so that a cost

20 provision would be appropriate to use in a uniform rate schedule applicable to all

21 insurers in the state.

22

23 **Q. What is catastrophe reinsurance, who buys it, and why do they buy it?**

24

1   A. Catastrophe reinsurance is a contract purchased by a primary insurance

2   company and sold by a reinsurer, or a group of reinsurers, to transfer risk from

3   loss due to large catastrophic events. The most common type of contract used

4   for catastrophe risk is called "Portfolio Excess of Loss" ("Portfolio XOL"), or just

5   "XOL." A single XOL contract has an "attachment" and a "limit." An XOL covers

6   the amount of portfolio loss caused by a single event in the amount which

7   exceeds the XOL attachment with a maximum equal to the XOL limit. In some

8   instances, there is co-participation, which means that only a percentage of the

9   amount of loss in the XOL layer is covered. Portfolio XOL contracts, which are

10   often referred to as "treaties" since there are typically multiple reinsurers

11   involved, cover the first event within a year of coverage. It is standard for treaties

12   to include a provision for the primary carrier to automatically purchase a

13   "reinstatement" if it has a loss which triggers a reinsurance payment. The

14   reinstatement premium allows for the full limit to be reinstated after the first event

15   exhausts the limit provided. There are cases where a limit is provided, and if an

16   event exhausts that limit, then there is no coverage available for the remainder of

17   the contract period. It is typical for primary carriers to buy multiple treaties that

18   stack on top of each other. In other words, a treaty will have an attachment

19   equal to the attachment plus limit of another treaty. Primary carriers select

20   reinsurance programs that best fit their particular needs and buy reinsurance to

21   ensure that money is available to pay claims and remain financially viable after

22   very large and uncommon to rare events.

23

1 **Q. Are the reasons that member companies purchase reinsurance similar**

2 **to the reasons that the hypothetical one company must purchase**

3 **reinsurance?**

4

5 A. Yes. The hypothetical one company for which the NCRB makes rates in North

6 Carolina must purchase reinsurance for the same reasons that individual carriers

7 purchase reinsurance. That hypothetical one company is faced with numerous

8 realistic hurricane loss scenarios that far exceed its ability to pay.

9

10 The annual earned premium at current manual level for the two filings combined

11 is about $205.2 million for the hypothetical one company. There are many

12 scenarios in which hurricane losses are projected to be many multiples of that

13 amount. If an individual company experienced a loss many multiples of its

14 collected premium, it would first look to its surplus and reinsurance to meet its

15 obligations to policyholders. If the surplus and reinsurance were not sufficient,

16 then that company would become insolvent. There has been a history of

17 company insolvencies following major hurricanes in the United States. Following

18 Hurricane Hugo that hit Charleston, South Carolina and Hurricane Andrew that

19 hit Florida, there were multiple insolvencies. There have been at least two

20 insolvencies since Hurricane Ian in Florida in late September, 2022.

21

22 It would be irresponsible and imprudent for the hypothetical one company not to

23 purchase reinsurance. The net cost of reinsurance analysis prepared by Aon

1 reflects the need for that hypothetical one company to purchase and maintain

2 reinsurance.

3

4

5

6 **Q. Please describe how the reinsurance program was designed and priced**

7 **for purposes of NCRB rate filings? Do you think it is reasonable?**

8

9 A. The Aon Catastrophe Actuarial team designed the reinsurance program for

10 this rate filing. I manage this team and I am responsible for its work product.

11 The reinsurance program structure and pricing are determined by an analysis of

12 reinsurance programs placed by Aon for its reinsurance clients, and I believe it is

13 reasonable and appropriate. Three components of the analysis are described

14 here.

15

16 **Program attachment and total limit** describes the total amount of reinsurance

17 coverage. Since companies vary substantially in size, so do their limit purchase

18 and attachment for their bottom layers. To normalize for company size, we

19 looked at the frequency with which a single event would trigger a recovery and

20 the frequency with which a single event would exhaust the limit of the entire

21 program for each company. This was calculated separately for the AIR and the

22 RMS models. We then calculated the median attachment and exhaustion

23 (exhaustion = bottom layer attachment + total program limit) frequencies by

24 model and by region (Southeast and Nationwide). The frequencies for

1   attachment and exhaustion were averaged across the regions, which resulted in

2   attachment and exhaustion frequency by model. Using portfolio loss distributions

3   by model for the portfolio in the filing, we calculated the dollar amount of

4   attachment and exhaustion (and therefore limit) by model. The attachment of the

5   reinsurance program in the filing is the average of the AIR indicated attachment

6   and RMS indicated attachment. The exhaustion of the reinsurance program in

7   the filing is the average of the AIR indicated exhaustion and the RMS indicated

8   exhaustion.

9   **Reinsurance Market Pricing Model** For AIR and RMS, a log-linear regression

10   model was built to calculate fitted reinsurance price based on modeled expected

11   ceded loss. Using these regression models, an indicated price for any layer can

12   be calculated based on each catastrophe model (AIR and RMS). The selected

13   prices by layer used in this rate filing are the averages of the AIR indicated prices

14   and the RMS indicated prices.

15

16   Note: Because insight into reinsurance market pricing is an important proprietary

17   asset for Aon, the log-linear models are considered a trade secret and therefore

18   not disclosed in this public filing.

19

20   **Program Structure**. After the market pricing model is determined along with the

21   program's attachment and limit, the program is then broken into layers. We run

22   an optimization analysis to find the five-layer catastrophe program that has the

23   lowest deposit premium. The method is designed to calculate an indicated

1   reinsurance premium that is as low as possible, subject to the market pricing

2   model and program attachment and limit specifications.

3

4   The reinsurance structure determined by the method described above is shown

5   in Exhibit RB-14. The pricing with loss analysis is shown in Exhibit RB-15.

6

7   **Q. Have you seen reinsurance costs going up in recent years?**
8

9   A. The global reinsurance market has experienced some extraordinary volatilities

10 since 2019. Reinsurance prices have increased significantly in the U.S. for the

11 past three years. This increase was initially driven by Florida in the Southeast

12 region, but the significant increase has now been seen countrywide since 2021.

13

14 **Q. How was the reinsurance premium allocated?**
15

16 A. Reinsurance premium by layer is allocated to a territory based on that

17 territory's share of expected ceded loss and loss adjustment expense (LAE) by

18 layer. Exhibit RB-15 shows the total expected ceded loss and LAE by layer and

19 Exhibit RB-17 shows the proportion of hurricane peril reinsurance premium,

20 ceded average annual loss, and reinsurance margin (a.k.a. "net cost of

21 reinsurance") allocated to each territory segment for each layer. Other perils

22 were used in the calculation, but because they contributed such a small amount

23 of expected ceded loss they were not shown on the exhibits. Exhibit RB-17

1 shows the dollar amount of reinsurance margin allocated by territory and policy

2 form.

3

4 **Q. How was the net cost of reinsurance calculated?**

5

6 Net cost of reinsurance is Deposit Premium + Expected Reinstatement Premium

7 - Expected Ceded Loss & LAE. The reinsurance program, the loss distribution

8 from the portfolio as determined by event loss tables (ELTs) from catastrophe

9 models, and the LAE assumptions are input into a DFA (Dynamic Financial

10 Analysis) program to calculate the average ceded loss and LAE and average

11 reinstatement premium over a specified number of simulated years. The loss

12 distribution which is produced by the AIR model is already in the form of

13 simulated loss experience for 100,000 years. The DFA program calculates for

14 each year the total reinsurance recoveries and reinstatement premium paid. The

15 program then calculates the average annual ceded loss & LAE and the average

16 reinstatement premium. The loss distribution from RMS models is a list of

17 possible catastrophic events. Instead of providing a specific year and amount of

18 loss from each event, each event has a parametric distribution for frequency and

19 severity. The DFA program creates a simulation of 1,000,000 years of loss

20 experience to make a table containing year, event ID, and specific amount of

21 loss. From that point the calculation works the same as for the AIR model.

22

23 For the NCRB filings combined, our analysis shows that the expected

24 reinsurance premium is $87,553,368, the expected ceded loss & LAE is

1    $16,925,905, and the net cost of reinsurance is $70,627,463, as shown on

2   Exhibits RB-15 and RB-18. Allocation by territory is done using the method

3   described in response to the previous question. The net cost of reinsurance

4   amounts for the separate filings are as follows: $36,234,337 for MH(C) and

5    $34,393,126 for MH(F).

6

7   **Q. Given your experience in catastrophe reinsurance, do you find this**
8   **approach to be reasonable?**

9

10   A. Yes. Aon's approach is based on detailed information on current reinsurance

11   market rates and the underlying model output.

12

13   **Q. Do you know whether the Rate Bureau has used in its 2024 Mobile**
14   **Homeowners filings the Aon net cost of reinsurance results you provided?**

15

16   A. Yes. I am advised that the Rate Bureau has used in the filings both our

17   statewide net cost of reinsurance results and those results allocated to the

18   territory level.

19

20   **Q. Are you aware of the following provisions in the North Carolina statutes,**
21   **in N.C.G.S. 58-36-10(7):**
22   *Property insurance rates established under this Article may include a provision to*
23   *reflect the cost of reinsurance to protect against catastrophic exposure within this*
24   *State. Amounts to be paid to reinsurers, ceding commissions paid or to be paid*
25   *to insurers by reinsurers, expected reinsurance recoveries, North Carolina*
26   *exposure to catastrophic events relative to other states' exposure, and any other*

1 *relevant information may be considered when determining the provision to reflect*

2 *the cost of reinsurance.*

3

4 A. Yes, I am. This NC statute provision is consistent with ASOP 53, Estimating

5 Future Costs of Prospective Property/Casualty Risk Transfer and Risk Retention,

6 which "applies to actuaries when performing actuarial services with respect to

7 developing or reviewing future cost estimates (commonly known as actuarial

8 indications) for prospective property/casualty risk transfer and risk retention. For

9 example, this standard applies when actuaries are developing future cost

10 estimates underlying product prices, estimating funding requirements for self-

11 insured programs and captives, and developing reinsurance prices."

12

13 **Q. Do you have an opinion on whether the analysis you and Aon have**

14 **performed on behalf of the Rate Bureau on the net cost of reinsurance for**

15 **this filing has taken into consideration the provisions of that statute?**

16

17 A. Yes. Based on my experience with hurricane models and using modeled

18 hurricane losses, along with my experience with catastrophe reinsurance and

19 determining catastrophe reinsurance costs for rate filings, it is my opinion that the

20 net cost of reinsurance analysis for this filing properly considers all of the items

21 set forth by the statute. Further, based on my experience in the actual

22 marketplace, it is my opinion that a reasonable and appropriate provision for the

23 net cost of reinsurance must be incorporated into Mobile Homeowner insurance

24 rates in North Carolina for those rates to properly reflect and protect against the

25 catastrophe exposure in this state.

1

2 **Q. Do you have an opinion regarding the appropriateness of the net cost of**

3 **reinsurance provision incorporated into these Mobile Home filings?**

4

5 A. Yes. Based on my experience with hurricane models and using modeled

6 hurricane losses, along with my experience with catastrophe reinsurance and

7 determining catastrophe reinsurance costs for rate filings, it is my opinion that the

8 provision for the net cost of reinsurance in these filings, at the statewide and

9 territory levels, is reasonable and appropriate.

10

11 **Q. Can you please describe the issues related to the compensation for**

12 **assessment risk?**

13

14 A. Property insurance written in the residual market in North Carolina presents

15 considerable risk for primary insurers that write property insurance. The North

16 Carolina Insurance Underwriting Association (i.e., the Coastal Property Insurance

17 Pool, or "Beach Plan") and the North Carolina Joint Underwriting Association

18 (i.e., the "FAIR Plan") together serve as that residual market. The Beach Plan

19 and FAIR Plan provide property insurance when policyholders are unable to

20 purchase insurance coverage from companies in the voluntary market. In states

21 like North Carolina with significant exposure to catastrophic events and/or where

22 the availability of insurance is limited in the voluntary market, property insurance

23 residual markets may grow to represent a sizable portion of the total insured risk.

24

1   Similar to insurance companies writing voluntary business, the Beach and FAIR

2   Plans use the premiums collected from policies they issue to fund the losses and

3   expenses attributable to the coverages they insure. When premiums are greater

4   than losses and expenses during a given year, the Beach Plan and the FAIR

5   Plan accumulate surplus. That surplus is available to pay future losses and

6   expenses in the event that they exceed collected premiums plus investment

7   income. However, if the surplus of either the Beach Plan or FAIR Plan is

8   exhausted, the additional costs of that entity are then, by statute, passed on to

9   property insurers in North Carolina in the form of an assessment. The potential

10   overall industry assessment from the Beach Plan for any single year is capped at

11    $1 billion, but the potential assessment from the FAIR Plan is unlimited. If losses

12   in the Beach Plan exceed the retained surplus, the $1 billion industry

13   assessment, and any other resources of the Beach Plan (such as reinsurance),

14   any additional losses are passed through directly to residential property

15   insurance policyholders in North Carolina.

16

17   This risk of potential assessment by the Beach Plan and/or FAIR Plan on

18   property insurers in North Carolina requires that those companies be

19   compensated for the additional risk to their capital. To quantify this risk, Aon has

20   applied a procedure previously developed by Milliman and adopted by NCRB to

21   incorporate a provision in property insurance rates (homeowners insurance,

22   dwelling insurance, and mobile home insurance) that compensates insurers for

23   that risk.

1

Q. Can you please explain the procedure you used to determine the needed

compensation for assessment risk?

4

A. Yes. There are two steps in the methodology to quantify the compensation for

assessment risk. The first step is to calculate the magnitude of the exposure

itself, and the second step is to determine the fair compensation to be paid to

insurers for being required to bear that risk.

9

To quantify the magnitude of the exposure, it is necessary to estimate the

expected value of the assessments on insurers arising from catastrophic losses

incurred by the Beach Plan and/or FAIR Plan. Because an assessment on

insurers results only after either the Beach Plan or FAIR Plan has exhausted

other resources available to pay losses, we needed to determine the likelihood of

that occurring as well as the amount by which the losses exceed those other

resources.

17

Aon quantified the risk of assessment by the Beach Plan and FAIR Plan using a

methodology similar to that developed by Milliman and presented in previous

filings. First, Aon collected the Beach Plan's and FAIR Plan's exposures at the

county level from the Beach Plan's and FAIR Plan's websites for the 2023-2024

storm season. Then we reviewed the Beach Plan's and FAIR Plan's reinsurance

programs in place for the 2023-2024 storm season, along with assumptions of

1 the Beach Plan's and FAIR Plan's accumulated surplus available for the season.

2 The accumulated surplus and available reinsurance are the "other resources"

3 that are available to pay for hurricane losses during the 2023-2024 storm season.

4 Aon then ran the AIR and RMS hurricane models on the Beach Plan's and FAIR

5 Plan's exposures for the 2023-2024 storm season, calibrated modeled event

6 losses based on the published PML information available on the Beach Plan's

7 and FAIR Plan's websites, and evaluated the impact of reinsurance on each

8 modeled event. Aon utilized its in-house dynamic simulation model ReMetrica to

9 calculate the Beach Plan and FAIR Plan deficits after applying their reinsurance

10 and surplus. For each adjusted modeled loss, ReMetrica determined the amount

11 of loss that would be covered by reinsurance and the remaining losses that

12 would be funded either from the Beach Plan's or FAIR Plan's accumulated

13 surplus, through assessments on property insurers in the state, or ultimately

14 through assessments on North Carolina property insurance policyholders. We

15 subtracted the accumulated surplus of the Beach Plan and FAIR Plan from the

16 losses remaining after reinsurance, limited the assessable losses due to the

17 Beach Plan exposures to $1 billion, and calculated the average assessment on

18 property insurers across all events simulated by the models. This average

19 assessment on property insurers is equal to the expected value of the losses that

20 would be funded through assessments on North Carolina property insurers.

21

22 As I mentioned earlier, this calculation produces a measure of the magnitude of

23 the assessment exposure. That is, it represents the risk to insurers' capital that

1   is associated with the exposure to Beach Plan or FAIR Plan assessments. The

2   next step is to use the method previously developed by Milliman to measure the

3   fair compensation to insurers for bearing this risk.

4

5   **Q. Can you please explain how you measured the compensation needed for**

6   **bearing this risk?**

7

8   A. Yes. To measure the fair compensation for bearing this risk of assessment,

9   we relied on publicly available data that quantifies the market price of

10 catastrophe risk, taken from recently issued insurance linked securities.

11 Insurance linked securities (ILS) are securities such as catastrophe bonds which

12 have conditional payoffs that are very similar to reinsurance. Investors purchase

13 these securities at significant yield premiums compared to risk-free bonds

14 because the investors are exposed to loss of principal and interest if certain

15 "insured events" occur.

16

17 **Q. What kind of ILS data are available and how is this information used to**

18 **determine the compensation for assessment risk?**

19

20 A. We relied on insurance linked security yield information to price the

21 Compensation for Assessment Risk. Lane Financial, LLC is a firm that has

22 specialized in the analysis of insurance linked securities. In the past, Lane

23 published a table of data each year that summarized a variety of information that

1   can be used to evaluate the fair compensation for bearing catastrophe risk. For

2   each ILS in the table, Lane published the following data: the yield on the

3   security; the excess return over the risk-free rate; the probability that the security

4   will suffer a loss; and the expected value of loss anticipated on the security.

5   These data elements provide the foundation for the analysis of the proper

6   compensation for bearing the risk of Beach Plan or FAIR Plan assessments.

7   However, Lane has not published the insurance linked securities table since

8   March 2022.

9

10   Aon also collects and aggregates insurance linked securities information similar

11   to the information published by Lane. For each insurance linked security in Aon's

12   table, the following data are available: the peril and region the insurance linked

13   security covers; the yield on the security; the excess return over the risk-free

14   rate; the probability that the security will be attaching; and the expected value of

15   loss anticipated on the security. For the 2023 CAR study, the 2013 – 2021

16   information utilized was from Lane Financial and the 2022 data utilized was from

17   Aon.

18

19   There are a number of defined terms that are useful in describing the mechanics

20   of the compensation for assessment risk analysis.

21   ▪ The "*yield spread*" is the difference between the yield on a particular ILS and

22   the risk-free rate. If a $100 million bond is issued with a yield spread of 10%,

23   this implies that the insurer issuing the bond would pay $10 million in interest

1   in excess of the interest at the risk-free rate to encourage investors to

2   purchase such a security.

3   ▪ Continuing with the example of the $100 million bond above, now assume

4   that the distribution of hurricane losses is such that, based on the probability

5   and amount of potential hurricane losses, an investor would anticipate having

6   an average loss of $2 million per year. This amount is identified as the

7   "expected loss."

8   ▪ Since the investor in this example receives compensation of $10 million in

9   excess of the risk-free rate for bearing the risk of loss, the "expected profit" to

10   the investor is $8 million (i.e., $10 million in interest in excess of the interest at

11   the risk-free rate minus $2 million of expected losses).

12 ▪ Finally, the "profit multiple" is the ratio of expected profit to expected loss. In

13   the above example, the profit multiple would be $8 million of expected profit

14   divided by $2 million of expected loss, or a profit multiple of 4.0.

15 The profit multiples derived from insurance linked securities provide an estimate

16 of the compensation that investors require to bear catastrophe risk. This

17 information tells us what investment returns are required by capital providers to

18 take on the risk of loss from a catastrophic event. One particularly important

19 feature of this metric is that it is a measure of compensation per dollar of

20 expected loss. As a result, because the first step of our analysis determines the

21 expected value of losses that would be funded through assessments, the profit

22 multiple can be applied to those expected values to develop an estimate of the

23 fair compensation for bearing such risk. This is the measure of risk we relied

1 upon in evaluating the fair compensation for property insurers whose capital is

2 exposed to Beach Plan and/or FAIR Plan assessments.

3

4 **Q. Generally speaking, which insurance linked securities have larger risk**

5 **premiums and higher profit multiples?**

6

7 A. For exposures such as catastrophic events, securities that have a lower

8 probability of incurring a loss have greater volatility and, as a result, have larger

9 risk premiums. Securities with larger risk premiums have a larger ratio of

10 expected profit to expected loss and, as such, have higher profit multiples.

11

12 **Q. Have you developed any exhibits that summarize the calculations used**

13 **to develop the fair compensation to insurers for bearing the risk of Beach**

14 **Plan and/or FAIR Plan assessments?**

15

16 A. Yes. Exhibit RB-19 contains ten pages of information required to develop the

17 fair compensation for bearing Beach Plan and FAIR Plan assessment risk.

18 ▪ Page 1 of Exhibit RB-19 shows the curve fit to the ILS profit multiples

19 based on all catastrophe-related securities issued in the last ten years. As

20 I explained earlier, nine years of ILS data came from Lane and one year of

21 ILS data came from Aon. This exhibit also includes the equation of the

22 fitted curve, which can be used to determine the profit multiple for any

23 layer to which insurer capital is exposed.

1   ▪ Page 2 of Exhibit RB-19 shows a summary of the Beach Plan's

2   reinsurance program, and Page 6 shows a similar summary of the FAIR

3   Plan's reinsurance program, both for the 2023-2024 season. These

4   summaries include the various layers of reinsurance purchased and the

5   coverage levels within those layers.

6   ▪ Pages 3 and 7 display the profit multiples calculated for each layer of the

7   Beach Plan's and FAIR Plan's loss distributions, based on the equation

8   shown on Page 1. In order to determine the fair compensation to

9   voluntary insurers for bearing the risk of assessments, we need to

10   determine which layers contain losses that will be funded by assessments,

11   as well as the corresponding expected losses within those layers. The

12   profit multiples can then be applied to the expected losses to determine

13   the appropriate compensation per dollar of expected loss in each layer.

14   ▪ Pages 4 and 8 illustrate how potential losses for the Beach Plan

15   Residential Account and FAIR Plan are funded. (The Beach Plan

16   determines losses and assesses voluntary insurers separately for each

17   account, while the FAIR Plan has only one account.) Because of the $1

18   billion annual cap on Beach Plan assessments, any amounts needed to

19   pay claims in excess of the assessable amounts are to be collected

20   through surcharges on property insurance policyholders statewide. For

21   each event simulated by the hurricane models, losses are separated by

22   account (Beach Plan Residential, Beach Plan Commercial, Coastal Plan

23   Residential, Coastal Plan Commercial, and FAIR Plan. The losses for

1   each account are then divided into layers based on the source of funding

2   for those losses – Beach Plan or FAIR Plan surplus, assessments on

3   voluntary insurers, private reinsurance, and ultimately any additional

4   amounts in the Beach Plan to be covered by policyholder surcharges.

5   Finally, the losses associated with each event are accumulated in each of

6   the loss layers to determine expected values.

7   ▪ Pages 4 and 8 illustrate the funding of potential losses within each layer.

8   Since the purpose of this analysis is to determine the fair compensation

9   for the risk of assessments on private insurers, the analysis must take into

10   account the probability of losses occurring within each layer and the

11   expected value of the losses that will be borne by private insurers. Pages

12   5 and 9 of Exhibit RB-19 provide that analysis. Those pages show the

13   expected value of the losses that would be covered by the Beach Plan

14   Residential and FAIR Plan accounts, and the average annual amount of

15   those losses that would be assessed to private insurers. Pages 5 and 9

16   also display the average profit multiples associated with each layer of the

17   loss distribution, and the product of the indicated profit multiples times the

18   expected losses within each layer. The sum of those values is the

19   indicated compensation for assessment risk for each account.

20   ▪ The final step in the calculation is to determine the appropriate provision to

21   be included in the mobile homeowner insurance rates to compensate

22   insurers for the risk of Beach Plan and/or FAIR Plan assessments. This

23   provision is expressed as a percent of premium and is developed on Page

1   10 of Exhibit RB-19. Since assessments for Beach Plan and/or FAIR Plan

2   losses are applied to all property insurance lines in the state, the table on

3   Exhibit RB-19, Page 10 shows the development of a provision that will

4   produce an amount of revenue equal to the total required compensation of

5       $130.62 million when incorporated into the rates for homeowners, dwelling

6   and mobile home insurance in North Carolina. As shown on this exhibit,

7   that provision is 2.8% of total property insurance premium in the state.

8   **Q. Did you make any adjustments to the 2.8% compensation for**

9   **assessment risk provision for North Carolina property insurance?**

10

11 A. Yes. Consistent with other recent property filings, the Rate Bureau is aware

12 that some reinsurance contracts provide coverage for residual market

13 assessments, including the potential non-recoupable assessments from the

14 Beach Plan and FAIR Plan. As a result, it is possible that the reinsurance

15 contracts purchased by North Carolina property insurance companies may

16 include some coverage for assessments such that the exposure to Beach Plan

17 and/or FAIR Plan assessments is no longer fully retained by the primary carrier.

18 Given this information and the information that not all companies buy reinsurance

19 that includes coverage for residual market assessments, the Rate Bureau made

20 the assumption that 50% of the North Carolina property insurance companies'

21 exposure to assessments from the Beach Plan and/or FAIR Plan is retained by

22 the companies.

23

1   As a result, we multiplied this expected 50% market share by the 2.8% full

2   compensation for assessment risk provision to determine an overall

3   compensation for assessment risk provision of 1.4%.

4

5   **Q. In your opinion, is it appropriate to include a 1.4% provision for the**

6   **compensation for assessment risk in mobile homeowner insurance rates in**

7   **North Carolina?**

8

9   A. Yes. Insurance companies writing mobile homeowner policies in North

10   Carolina are exposed to the risk of Beach Plan and FAIR Plan assessments as a

11   result of writing voluntary market property insurance in the state. Those

12   insurance companies are entitled to receive fair compensation for bearing that

13   risk, and it is appropriate to include that compensation in the mobile homeowner

14   rates. The compensation for assessment risk methodology we used here relies

15   on a widely accepted measure of compensation to determine a provision that will

16   fairly compensate insurers for bearing this additional risk to their capital.

17   Moreover, the North Carolina statutes provide that prospective exposure to non-

18   recoupable assessments shall be considered as an appropriate factor in the

19   making of rates by the Rate Bureau.

20

21   **Q. Are you aware of North Carolina Senate Bill 452's provision that**

22   **increased the Beach Plan's coverage limits?**

23

1 A. Yes, SB 452 was enacted into law as Session Law 2023-133 in October 2023.

2 SB 452 increased the Beach Plan's coverage limits from $750,000 to $1 million

3 on habitational property. SB 452 also increased the Beach Plan's coverage limits

4 from $3 million to $4 million on commercial property, and from $6 million to $10

5 million on structures with multiple firewall divisions.

6

7 **Q. Do you have an opinion on how SB 452's new coverage limits on Beach**

8 **Plan policies would impact the hurricane, net cost of reinsurance, and**

9 **compensation for assessment risk provisions in the NCRB Mobile**

10 **Homeowners Filings?**

11

12 A. The new coverage limits on Beach Plan policies could potentially increase the

13 exposure in the Beach Plan and increase the compensation for assessment risk

14 provision. This stems from two potential exposure changes: 1) more policies will

15 be eligible for coverage in the Beach Plan and these policies may move from the

16 voluntary market to the Beach Plan; and 2) some Beach Plan existing policies

17 that were capped at the previous limits are now eligible for a higher coverage

18 limit. The magnitude of the increases of the NCRB property rate filings' hurricane

19 provision and net cost of reinsurance provision depends on how policies shift

20 from the voluntary markets to the Beach Plan and the number of limit policies in

21 the Beach Plan.

22

23 **Q. Do you have an opinion on whether NCRB should make any**

24 **adjustments to this filing to account for the passage of SB 452?**

25

1   A. It is unclear how many policies in the Beach Plan will be subject to the new

2   limits, and it is likewise unclear whether and how many additional policies would

3   be written by the Beach Plan due to SB 452. It is also unclear how the Beach

4   Plan's PML and reinsurance program will be impacted by SB 452. Therefore, the

5   impact of SB 452 is not quantifiable at this time. Currently, I don't recommend

6   any adjustments to account for SB 452 in these 2024 NCRB Mobile Homeowners

7   Filings.

8

9   **Q. Does that conclude your testimony?**

10

11   A. Yes.

Minchong Mao, FCAS, CCRMP, MAAA, Actuary

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Summary

- Over twenty years of experience with insurance, reinsurance, catastrophe risk management , actuarial pricing and management at State Farm Insurance Companies and Aon plc
- Commission Member, actuary representing the property insurance industry on the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) 2015-2018
- Strong leadership, work ethic, communication and teamwork skills
- Deep knowledge and experience in Insurance operations, including Actuary, Underwriting, and Claims.
- Extensive experience and understanding with catastrophe models, underlying science and methodologies

Experience

Senior Managing Director, Actuary
Aon Reinsurance Solutions
April 2021– Present

Managing Director, Actuary
Aon Reinsurance Solutions
September 2018– April 2021

Major Responsibilities include:

- Manage the catastrophe actuarial and predictive analytics group within Aon Reinsurance Solutions which focuses on supporting Aon clients' ratemaking and underwriting needs.
- Implement and sign off Aon's ASOP 38 compliance framework.
- Provide rate filing support for Aon's clients through regulatory challenges.
- Serve on Impact Forecasting leadership steering committee to oversee Impact Forecasting's product strategies and priorities.
- Serve as Aon Impact Forecasting's signatory actuary during Florida Commission on Hurricane Loss Projection Methodology submissions.
- Manage Homeowner Return on Equity (ROE) Outlook study. Aon's Homeowners ROE Outlook calculates risk-adjusted returns for the US homeowners industry, provides the insurance industry with market reality diagnostics and profitability insights.
- Manage Residual Market Industry study. This product provides a holistic view of the residual market's impact on the property insurance industry and the individual company's risk profile.
- Serve as Aon's key corporate contact for China business development and expansion.

Catastrophe Modeling Manager, Actuary
State Farm Insurance Companies
Feb. 2005– Sept. 2018
Major Responsibilities included:

- Manage State Farm's catastrophe modeling unit. State Farm's catastrophe modeling practice grew into the industry's leading practice with high quality and productivity under my leadership.
- Manage vendor relationships with AIR, EQECAT, ARA, and RMS. Negotiate contract terms and conditions, engage vendors' support through regulatory challenges.
- Provide Actuarial opinions on State Farm's use of catastrophe models. Oversee the due diligence and model validation work to ensure catastrophe modeling practices at State Farm meet the Actuarial Standards and comply with laws and regulatory requirements.
- Serve as a resource to the Corporate Law department for litigation and legislative issues.
- Provide various catastrophe risk measures and analytics (PML, TVaR, Standard Deviations, etc.) for State Farm Fire and Affiliates for exposure management and reinsurance purposes.
- Provide catastrophe information to rating agencies such as AM Best, S&P and Moody's.
- Develop and deploy hazard analysis tools across the Enterprise for exposure underwriting and management.
- Utilize catastrophe data in Dynamic Financial Analysis projects to analyze capital adequacy and capital allocation; develop simulation tools to incorporate catastrophe risk into Enterprise Risk Management.
- Provide exposure information, technical support, risk analysis and documentation reviews for all State Farm's issuances of catastrophe bonds.
- Lead State Farm's compliance work to meet Office of the Superintendent of Financial Institutions (OSFI) B-9 - Earthquake Sound Practice requirements.
- Monitor modeling regulations in several jurisdictions (FL, LA, SC, HI, MD, etc.). Work with State Farm counsel to provide revisions to bills related to coastal issues and catastrophe risk management during legislative sessions.
- Represent the Actuarial department on State Farm Enterprise Catastrophe Response Team. Provide real time analysis for actual catastrophe events to assist Catastrophe Claims' resources deployment, Catastrophe Reserving and communicate with Senior Management about the potential impact.
- Serve as a homeowner pricing manager for Mississippi for two years, with major responsibilities including:
  - Manage the development and implementation of rates and rules for several personal lines which satisfy the financial objectives of the enterprise.
  - Coordinate the analyses of actuarial ratemaking process
  - Review rate proposals.
  - Serve as a key Actuarial resource for Market Areas and regulators.

Actuarial/Statistics/Modeling Analyst
Jan 2001– Feb. 2005
- Conducted homeowner rate revisions for Maine, Kansas, and Mississippi.
- Developed and maintained State Farm's rate revision tool for property lines.

Other Professional Activities

- 2015 – 2018, Commission Member, Industry Actuary, Florida Commission on

Hurricane Loss Projection Methodology (FCHLPM). I was appointed by Florida CFO Jeff Atwater to this position in Jan. 2015.

- 2010 – 2013, advisory group member to the Insurance Bureau of Canada (IBC) and Office of the Superintendent of Financial Institutions (OSFI) to provide expert opinions on a study for insurance and economic impact of major earthquakes in Canada.

- 2011- 2013, advisory group member for the Insurance Bureau of Canada (IBC) and Office of the Superintendent of Financial Institutions (OSFI) to revise OSFI Guideline B-9 (Earthquake Exposure Management Sound Practice Guideline for insurance companies).

- 2012-2016, organized nine State Farm senior executives delegation (including State Farm's CEO, COO, CFO, CMO, General Counsel, CTO, CSO) visits to China. Established relationship and set up meetings with Chinese regulators and senior executives of top Chinese insurance companies. Participated in discussions, served as advisor and interpreter for State Farm delegations.

- 2012-2018, visiting instructor for Illinois State University Math Department Actuarial Science program. Present catastrophe modeling and regularity topics to actuarial graduate students.

- 2014- 2018, board member of the International Society of Catastrophe Managers (ISCM). Promote education and career development for Catastrophe Modeling professionals.

- 2016- Present, co-chair of a taskforce to create a credential and certificate program for catastrophe risk management professionals on behalf of   Institute of Casualty Actuarial Society (iCAS) and International Society of Catastrophe Managers (ISCM).

- 2016- 2023, Member of Property /Casualty Extreme Events Committee, American Academy of Actuaries. This committee identifies issues relevant to the treatment of extreme catastrophe risks including sizing, insurability, pricing, funding, reserving, capital management, and loss mitigation. The committee also monitors federal and state catastrophe legislation and interacts with NAIC on these issues.

- 2016 – 2018, member of planning committee for the Reinsurance Association of America's annual catastrophe modeling conference.

- 2016 – Present, member of CAS Climate Change Committee. This committee recommends, supports and performs research on climate change and assesses the potential risk management implications for the insurance industry.

- 2023, I was invited to participate in the Insurance, Climate and AI forum at the Kennedy School of Government, Harvard University. The forum was initiated by President Obama's advisor on Science and Technology, Dr. Daniel Schrag. I provided key insights from insurance perspectives during the forum.

Designations

- Fellow of Casualty Actuarial Society (FCAS, 2007)
- Certified Catastrophe Risk Management Professional (CCRMP, 2019)
- Associate of Society of Actuaries (ASA, 2010) Currently, I am not an active member at SOA.
- Member of American Academy of Actuaries (MAAA,2005)
- Microsoft Certified Solution Developer (MCSD)
- Microsoft Certified Professional (MCP)

Education

- Master's degree in Computer Science, University of Missouri-Columbia, 2000
- Master's degree in Chemistry, Eastern Illinois University, 1997

- Bachelor's degree in Chemical Engineering, Beijing University of Chemical Technology, 1993

Award

- Special Achievement awards for excellent performance and exceptional business achievements, Property and Casualty Actuarial Department, State Farm Insurance in 2002, 2009, 2011, 2012, 2014, 2015, and 2016.
- Casualty Actuarial Society (CAS) Above and Beyond Achievement Award in 2019 to recognize my leadership role to establish Certified Catastrophe Risk Management Professional (CCRMP) designation for CAS Institute. The "Above & Beyond Achievement Award" is made annually, to one or more members of the CAS, who have made extraordinary contributions to the society.

Publications

- As a member of the American Academy of Actuaries Flood Working Group, I am one of the authors for the Monograph on Issues Surrounding National Flood Insurance Program - The National Flood Insurance Program: Challenges and Solutions. *American Academy of Actuaries*, April, 2017
- Akram Hazeen, Yan Zhang, **Minchong Mao**, Kraig A. Wheeler,a and Mark E. McGuire,   6-[(4-Hy-droxy-phen-yl)diazenyl]-1,10-phenanthrolin-1-ium chloride monohydrate, *US National Library of Medicine, National Institutes of Health (NIH)*, Dec. 1, 2011.
- As a member of the American Academy of Actuaries Flood Working Group, I am one of the authors of the following Monographs:

   The National Flood Insurance Program: Challenges and Solutions (2017) American Academy of Actuaries, April, 2017

   Uses of Catastrophe Model Output (2018). American Academy of Actuaries, July, 2018

   Wildfire: An Issue Paper - Lessons Learned from the 2017–2018 California Events   (2019), American Academy of Actuaries, June, 2019

Reference

- Available upon request.

NCRB CY 2022 Mobile Homeowners
Gross Modeled Hurricane Expected Losses
Including Cat LAE and Trend
Including Demand Surge and including Storm Surge

Territory	MH(C)-A+D	MH(C)-B	MH(C)-C	MH(C)-Total	MH(F)-O	MH(F)-R	MH(F)-Total	MH C+F Total
110	92,185	6,027	23,688	121,900	1,698	4	180,734	302,634
120	268,190	15,484	48,180	331,854	19,547	7	1,366,856	1,698,710
130	163,347	13,811	44,499	221,657	3,264	2	365,413	587,070
140	1,164,004	88,963	178,627	1,431,594	26,972	46	2,823,318	4,254,912
150	586,864	54,971	125,184	767,019	3,602	13	555,358	1,322,377
160	557,434	50,804	78,462	686,700	4,161	5	602,726	1,289,426
170	137,145	13,877	13,801	164,823	586	1	128,239	293,063
180	1,278,716	125,935	131,035	1,535,687	8,126	86	1,227,261	2,762,948
190	724,158	81,986	79,373	885,517	5,852	78	767,771	1,653,288
200	285,172	24,555	27,477	337,204	4,431	NA	593,579	930,783
210	396,547	42,449	36,339	475,335	2,337	27	406,047	881,382
220	631,897	58,520	60,459	750,876	4,713	12	746,668	1,497,543
230	617,274	55,063	57,412	729,749	7,880	13	1,206,867	1,936,615
240	1,456,590	152,463	126,902	1,735,956	5,711	101	933,019	2,668,975
250	518,306	51,763	46,256	616,326	4,053	95	602,644	1,218,969
260	583,507	64,032	44,600	692,139	1,559	7	334,404	1,026,542
270	416,331	39,041	34,958	490,329	1,330	33	246,258	736,587
280	146,731	15,215	12,139	174,085	408	7	90,148	264,233
290	209,401	17,807	15,810	243,018	1,675	19	290,652	533,670
300	125,297	10,141	9,463	144,901	1,237	14	217,476	362,378
310	476,787	50,137	38,634	565,558	1,670	15	403,343	968,901
320	589,369	63,024	48,107	700,500	1,965	32	411,850	1,112,350
330	32,303	3,717	2,757	38,777	168	1	33,208	71,985
340	474,105	49,654	38,509	562,267	1,532	26	290,378	852,646
350	328,537	33,100	25,296	386,933	938	21	213,205	600,137
360	351,969	34,520	26,419	412,907	1,252	21	298,508	711,415
370	11,136	944	691	12,772	41	0	10,736	23,508
380	61,532	5,387	4,042	70,961	146	1	41,787	112,748
390	46,777	4,552	3,206	54,535	150	2	36,445	90,980
Total	12,731,612	1,227,943	1,382,323	15,341,878	117,006	691	15,424,897	30,766,775

Modeled hurricane expected losses for North Carolina Rate Bureau, net of limits and deductibles. Results include demand surge and storm surge. Losses represent 50/50 blend of AIRv10 100k Standard event set and RMSv23 Historical event set. Results also include provisions for LAE and loss trend.

ASB

ACTUARIAL STANDARDS BOARD

Actuarial Standard
of Practice
No. 38

Revised Edition

**Catastrophe Modeling
(for All Practice Areas)**

**Developed by the
Catastrophe Modeling Task Force of the
General Committee of the
Actuarial Standards Board**

**Adopted by the
Actuarial Standards Board
July 2021**

Doc. No. 201

T A B L E   O F   C O N T E N T S

<u>**APPENDIXES**</u>

July 2021

TO: Members of Actuarial Organizations Governed by the Standards of Practice of the Actuarial Standards Board and Other Persons Interested in Catastrophe Modeling (for All Practice Areas)

FROM: Actuarial Standards Board (ASB)

SUBJ: Actuarial Standard of Practice (ASOP) No. 38

This document contains the revision of ASOP No. 38, *Catastrophe Modeling (for All Practice Areas)*.

History of the Standard

The ASB first began work on a standard for modeling in the late 1990s. Motivated primarily to address the role catastrophe modeling of earthquakes and hurricanes played in casualty ratemaking, this work was focused on the use of specialized models where the actuary would have to rely on a model that was developed by professionals other than actuaries. As a result of this work, the ASB approved ASOP No. 38, *Using Models Outside the Actuary's Area of Expertise*, in June 2000 with the scope of the standard limited to the Property/Casualty area of practice. At the time, this was the only ASOP that specifically addresses modeling.

Over the ensuing years, the number and importance of modeling applications in actuarial science has increased, with the results of actuarial models often entering financial statements directly. Recognizing this trend, the ASB asked the Life Committee in 2010 to begin work on an ASOP focused on modeling. The Life Committee formed a task force to address this issue and, in February 2012, a discussion draft titled *Modeling in Life Insurance and Annuities* was released. Nineteen comment letters were received.

Based upon this feedback and numerous other discussions on the topic of modeling, in December 2012 the ASB created two multidisciplinary task forces under the direction of the General Committee: i) a general Modeling Task Force, charged with developing an ASOP to address modeling applications in all practice areas, and ii) a Task Force to consider expanding ASOP No. 38 to all practice areas while focusing exclusively on using catastrophe models.

An exposure draft titled *Modeling* was released in June 2013 with a scope that provides guidance to actuaries when selecting, designing, building, modifying, developing, or using models when performing actuarial services. ASOP No. 56, *Modeling*, was adopted by the ASB in December 2019. Changes have been made to this exposure draft of ASOP No. 38 to be consistent with ASOP No. 56 and other recent ASOPs.

The exposure draft of this revision of ASOP No. 38 was the work of the Catastrophe Modeling Task Force, whose membership has experience in life insurance, health insurance, property/casualty insurance, and enterprise risk management.

At the direction of the ASB, this standard was developed to apply to all practice areas and all forms of catastrophe models, including natural catastrophes such as hurricanes, earthquakes, and severe convective storms, and other catastrophes such as terrorist acts and pandemics.

Exposure Draft

The exposure draft was approved in September 2020 with a comment deadline of January 15, 2021. Four comment letters were received and considered in making changes that were reflected in the final ASOP.

Notable Changes from the Exposure Draft

Notable changes made to the exposure draft are summarized below. Additional changes were made to improve readability, clarity, or consistency.

1.   Section 1.2, Scope, was revised to provide additional guidance to actuaries whose actuarial services involve reviewing or evaluating models.

2.   In section 2, Definitions, the definition of "catastrophe model" was expanded to include a definition of model.

3.   Section 3.2, Appropriate Reliance on Experts (now titled Catastrophe Models Developed by Experts), was revised to adopt language from ASOP No. 56, section 3.5(b).

4.   An existing ASOP No. 38 example regarding validation to evaluate results derived from other models was reinserted into section 3.5.

5.   A disclosure requirement for the extent of reliance on experts was added to section 4.1(b) and (c).

Notable Changes from the Existing ASOP

A cumulative summary of the notable changes from the existing ASOP are summarized below. Notable changes do not include additional changes made to improve readability, clarity, or consistency.

1.   The ASOP was revised to apply to catastrophe models only and to all practice areas.

2.   The scope was expanded to include the activities "selecting, reviewing, and evaluating" models in addition to the existing activity of "using" a model when performing actuarial services.

3.   The scope was expanded to clarify that if the actuary determines that the guidance in the ASOP conflicts with the guidance in ASOP No. 56, the guidance of this ASOP will govern.

v

4.   A new section specifically addressing reliance on data or other information supplied by others (section 3.8) was added.

5.   The guidance on documentation (section 3.9) was updated and expanded to be consistent with current ASOPs.

The ASB thanks everyone who took the time to contribute comments and suggestions on the exposure draft.

The ASB would like to posthumously thank Martin M. Simons for his contribution to the ASOP No. 38 task force.

The ASB voted in July 2021 to adopt this standard.

Catastrophe Modeling Task Force

Shawna S. Ackerman, Chairperson
David A. Brentlinger   Bradley J. Davis

General Committee of the ASB

Susan E. Pantely, Chairperson
Geoff Bridges   Brian J. Mullen
Andrew M. Erman   Keith A. Passwater
Julianne H. Fried   Hal Tepfer
Robert S. Miccolis   Christian J. Wolfe

Actuarial Standards Board

Darrell D. Knapp, Chairperson
Elizabeth K. Brill   Cande J. Olsen
Robert M. Damler   Kathleen A. Riley
Kevin M. Dyke   Judy K. Stromback
David E. Neve   Patrick B. Woods

The Actuarial Standards Board (ASB) sets standards for appropriate actuarial practice in the United States through the development and promulgation of Actuarial Standards of Practice (ASOPs). These ASOPs describe the procedures an actuary should follow when performing actuarial services and identify what the actuary should disclose when communicating the results of those services.

ACTUARIAL STANDARD OF PRACTICE NO. 38

**CATASTROPHE MODELING
(FOR ALL PRACTICE AREAS)**

STANDARD OF PRACTICE

Section 1. Purpose, Scope, Cross References, and Effective Date

1.1   Purpose—This actuarial standard of practice (ASOP or standard) provides guidance to actuaries when performing actuarial services with respect to selecting, using, reviewing, or evaluating **catastrophe models**.

1.2   Scope—This ASOP applies to actuaries in any practice area when performing actuarial services with respect to selecting, using, reviewing, or evaluating **catastrophe models** to assess risk, including but not limited to **models** of hurricanes, earthquakes, severe convective storms, terrorist acts, and pandemics. This standard applies to the selection, use, review, or evaluation of **catastrophe models**, whether or not they are proprietary in nature.

If the actuary's actuarial services involve reviewing or evaluating **catastrophe models**, the reviewing or evaluating actuary should apply the guidance in this standard to the extent practicable within the scope of the actuary's assignment.

In addition to this standard, the actuary should follow the guidance in ASOP No. 56, *Modeling*, when selecting, using, reviewing, or evaluating **catastrophe models**. If the actuary determines that the guidance in this ASOP conflicts with the guidance in ASOP No. 56, the guidance of this ASOP will govern.

This standard does not apply to **models** of operational risks. This standard also does not apply to **models** of economic risks that deal with instances of extreme events such as hyper-inflation or a stock market collapse.

This standard also does not apply when the actuary is only designing, developing, or modifying a **catastrophe model** (or a portion of a **catastrophe model**).

If the actuary departs from the guidance set forth in this ASOP in order to comply with applicable law (statutes, regulations, and other legally binding authority), or for any other reason, the actuary should refer to section 4. If a conflict exists between this standard and applicable law, the actuary should comply with applicable law.

1.3　　Cross References—When this ASOP refers to the provisions of other documents, the reference includes the referenced documents as they may be amended or restated in the future, and any successor to them, by whatever name called. If any amended or restated document differs materially from the originally referenced document, the actuary should consider the guidance in this ASOP to the extent it is applicable and appropriate.

1.4　　Effective Date—This standard is effective for work performed on or after December 1, 2021.

Section 2. Definitions

The terms below are defined for use in this actuarial standard of practice and appear in bold throughout the ASOP.

2.1　　Assumption—A type of explicit **input** to a **catastrophe model** that is derived from **data**, represents possibilities based on professional judgment, or may be prescribed by law or others. When derived from **data**, an **assumption** may be statistical, financial, economic, mathematical, or scientific in nature, and may be described as a **parameter**.

2.2　　Catastrophe Model—A **model** of low-frequency events with high-severity or widespread potential effects. **Catastrophe models** may be used to explain a system, to study effects of different components, or to derive estimates.

2.3　　Data—Facts or information that are either direct **input** to a **catastrophe model** or inform the selection of **input. Data** may be collected from sources such as records, experience, experiments, surveys, observations, benefit plan or policy provisions, or **output** from other **models**.

2.4　　Expert—One who is qualified by knowledge, skill, experience, training, or education to render an opinion concerning the matter at hand.

2.5　　Input—**Data** or **assumptions** used in a **catastrophe model** to produce **output**.

2.6　　Intended Purpose—The goal or question, whether generalized or specific, addressed by the **catastrophe model** within the context of the assignment.

2.7　　Model—A simplified representation of relationships among real world variables, entities, or events using statistical, financial, economic, mathematical, non-quantitative, or scientific concepts and equations. A **model** consists of three components: an information **input** component, which delivers **data** and **assumptions** to the **model**; a processing

component, which transforms **input** into **output**; and a results component, which translates the **output** into useful business information.

2.8   Output—The results of the **catastrophe model** including, but not limited to, point estimates, likely or possible ranges, and **data** or **assumptions** (as **input** for other **models**), behavioral expectations, or qualitative criteria on which decisions could be based.

2.9   Parameter—A type of statistical, financial, economic, mathematical, or scientific value that is used as **input** to **catastrophe models**. Examples of **parameters** include expected values in probability distributions and coefficients of formula variables.

Section 3. Analysis of Issues and Recommended Practices

3.1   Introduction—In performing actuarial services, the actuary may find it appropriate to select, use, review, or evaluate **catastrophe models**. When selecting, using, reviewing or evaluating a **catastrophe model**, the actuary should do the following:

a.   determine the appropriate level of reliance on **experts**;

b.   have a basic understanding of the **catastrophe model**;

c.   evaluate whether the **catastrophe model** is appropriate for the **intended purpose**;

d.   determine that appropriate validation of the **catastrophe model** and **output** has occurred; and

e.   determine the appropriate use of the **catastrophe model** and **output**.

The actuary's level of effort in understanding and evaluating a **catastrophe model** should be consistent with the **intended purpose** and the **catastrophe model output's** materiality to the results of the actuarial analysis.

3.2   Catastrophe Models Developed by Experts—When selecting, using, reviewing, or evaluating a **catastrophe model** developed by **experts**, the actuary should take into account the following:

a.   whether the individual or individuals who developed the **catastrophe model** are **experts** in the applicable field;

b.   the extent to which the **catastrophe model** has been reviewed or validated by **experts** in the applicable field, including known differences of opinion among

experts concerning aspects of the **catastrophe model** that could be material to the actuary's use of the **catastrophe model**; and

c.   whether there are industry or regulatory standards that apply to the **catastrophe model** or to the testing or validation of the **catastrophe model**, and whether the **catastrophe model** has been certified as having met such standards.

The actuary may rely on **experts** in the applicable field in the evaluation of items in section 3.2(a)-(c) and should disclose the extent of such reliance.

3.3   Understanding of the Catastrophe Model—The actuary should be familiar with the basic components of the **catastrophe model** and understand both the user **input** and the **catastrophe model output**, as discussed below.

　　3.3.1   Catastrophe Model Components—The actuary should be familiar with the basic components of the **catastrophe model** and have an understanding of how such components interrelate within the **catastrophe model**. In addition, the actuary should identify which fields of expertise were used in developing or updating the **catastrophe model** and should make a reasonable effort to determine if the **catastrophe model** is based on generally accepted practices within the applicable fields of expertise. The actuary should also be familiar with how the **catastrophe model** was tested or validated and the level of independent **expert** review and testing.

　　3.3.2   User Input—The actuary should take reasonable steps to confirm that the precision and accuracy of the user **input** are consistent with the **intended purpose** and should refer, as applicable, to ASOP No. 23, *Data Quality*, when selecting, using, or evaluating **data** used in the **catastrophe model**. Certain user **input** may be required to produce **catastrophe model output** for the specific application. User **input** can include **assumptions** or **data**. If the **catastrophe model** requires user **input**, the actuary should evaluate the reasonableness of the user **input** and should have an understanding of the relationship between the user **input** and **catastrophe model output**.

　　3.3.3   Catastrophe Model Output—The actuary should determine that the **catastrophe model output** is consistent with the **intended purpose**.

3.4   Appropriateness of the Catastrophe Model for the Intended Purpose—The actuary should evaluate whether the **catastrophe model** is appropriate for the **intended purpose** and take into account the following:

3.4.1. <u>Applicability of Historical Data</u>—To the extent historical **data** are used in the development of the **catastrophe model** or the establishment of **catastrophe model parameters**, the actuary should take into account the adequacy of the historical **data** in representing the range of reasonably expected outcomes consistent with current knowledge about the phenomena being analyzed.

3.4.2. <u>Developments in Relevant Fields</u>—The actuary should make a reasonable effort to be aware of significant developments in relevant fields of expertise that are likely to materially affect the **catastrophe model**.

3.5   <u>Output Validation</u>— The actuary should validate that the **output** reasonably represents that which is being modeled. Depending on the **intended purpose**, **output** validation may include the following:

a.   comparing **output** to those of an alternative **model(s)**, where appropriate;

b.   comparing the **output** produced by the **catastrophe model** with historical observations, if applicable;

c.   comparing the consistency and reasonableness of relationships within the **output**; and

d.   evaluating the reasonableness of changes in the **output** due to variations in the user **input**.

3.6   <u>Appropriate Use of the Catastrophe Model and Output</u>—The actuary should evaluate the reasonableness of the **catastrophe model output**, considering the **input** and the **intended purpose**. The actuary should take into account the limitations of the **catastrophe model** and use professional judgment to determine whether it is appropriate to use the **catastrophe model output**. The actuary should also use professional judgment to determine whether any adjustments to the **catastrophe model output** are needed to meet the **intended purpose**. The actuary should disclose any such adjustments in accordance with section 4.1.

3.7   <u>Reliance on Another Actuary</u>—The actuary may rely on another actuary who has selected, used, reviewed, or evaluated the **catastrophe model**. However, the relying actuary should be reasonably satisfied that the other actuary is qualified to select, use, review, or evaluate the **catastrophe model** in accordance with applicable ASOPs, and the **catastrophe model** is appropriate for the **intended purpose**. The actuary should disclose the extent of any such reliance.

3.8   Reliance on Data or Other Information Supplied by Others—When relying on **data** or other information supplied by others, the actuary should refer to ASOP No. 23 and ASOP No. 41, *Actuarial Communications*, for guidance.

3.9   Documentation—The actuary should consider preparing and retaining documentation to support compliance with the requirements of section 3 and the disclosure requirements of section 4. If preparing documentation, the actuary should prepare such documentation in a form such that another actuary qualified in the same practice area could assess the reasonableness of the actuary's work and should document the steps taken to comply with this standard in light of proprietary aspects of the **catastrophe model**, if any. The degree of such documentation should be based on the professional judgment of the actuary and may vary with the complexity and purpose of the actuarial services. In addition, the actuary should refer to ASOP No. 41 for guidance related to the retention of file material other than that which is to be disclosed under section 4.

Section 4. Communications and Disclosures

4.1   Required Disclosures in an Actuarial Report—When issuing an actuarial report to which this standard applies, the actuary should refer to ASOP Nos. 23, 41, and 56. In addition, the actuary should disclose the following in such actuarial reports, as appropriate:

   a.   the **catastrophe model** used and the **intended purpose**;

   b.   the methodology used to validate the **catastrophe model** developed by **experts** (see section 3.2);

   c.   the extent of reliance on **experts** (see section 3.2);

   d.   a description of the user **input** that was incorporated into the **catastrophe model** (see section 3.3.2);

   e.   a description of adjustments made to the **catastrophe model output** (see section 3.6); and

   f.   the extent of any reliance placed upon the work of another actuary (see section 3.7).

4.2   Additional Disclosures in an Actuarial Report—The actuary also should include disclosures in accordance with ASOP No. 41 in an actuarial report for the following circumstances:

   a.   if any material **assumption** or method was prescribed by applicable law;

b.   if the actuary states reliance on other sources and thereby disclaims responsibility for any material **assumption** or method selected by a party other than the actuary; and

c.   if in the actuary's professional judgment, the actuary has deviated materially from the guidance of this ASOP.

4.3   Confidential Information—Nothing in this ASOP is intended to require the actuary to disclose confidential information.

Appendix 8

Background and Current Practices

Note: This appendix is provided for informational purposes and is not part of the standard of practice.

Background

Hurricane Andrew in 1992 and the Northridge Earthquake in 1994 led actuaries involved in evaluating hurricane and earthquake exposures to recognize the severe inadequacy of the traditional, empirical actuarial methods used for ratemaking for these exposures. Recognizing the need to replace these methods, many actuaries began using stochastic computer simulation models for their actuarial analysis of hurricane and earthquake exposure. Computer simulation models had been commonly used for some time by actuaries and others for the purpose of evaluating probable maximum loss but had not been widely used for ratemaking.

Over time, the output from catastrophe models became commonly used by property/casualty actuaries in developing rates for catastrophic perils as well as many other risk management purposes.

Current Practices

Catastrophe models are now widely used by actuaries in all practice areas for risk management analyses and calculating expected losses due to hurricanes, earthquakes, and terrorist acts. More recently, catastrophe models have also been developed to simulate wildfires, severe convective storms, tsunamis, and pandemics.

In addition, due to changes in regulations and financial reporting requirements, the number and importance of modeling applications in actuarial science has increased, with the results of actuarial models often entering financial statements directly.

Lastly, due to the evolution of enterprise risk management (ERM) practices and regulations, there has been increased use of catastrophe modeling as part of insurer stress testing and risk management across all practice areas. This trend is likely to continue to evolve and heighten in light of the emergence of the novel coronavirus and the COVID-19 pandemic.

Appendix 2

Comments on the Exposure Draft and Responses

The exposure draft of the proposed revision of ASOP No. 38, *Catastrophe Modeling (for All Practice Areas)*, was issued in September 2020 with a comment deadline of January 15, 2021. Four comment letters were received, some of which were submitted on behalf of multiple commentators, such as by firms or committees. For purposes of this appendix, the term "commentator" may refer to more than one person associated with a particular comment letter. The ASOP No. 38 Task Force carefully considered all comments received, and the ASB reviewed (and modified, where appropriate) the changes proposed by the ASOP No. 38 Task Force and the ASB General Committee.

Summarized below are the significant issues and questions contained in the comment letters and the responses. Minor wording or punctuation changes that were suggested but not significant are not reflected in the appendix, although they may have been adopted.

The term "reviewers" in appendix 2 includes the ASOP No. 38 Task Force, the ASB General Committee, and the ASB. Also, the section numbers and titles used in appendix 2 refer to those in the exposure draft, which are then cross referenced with those in the final ASOP.

SECTION 1. PURPOSE, SCOPE, CROSS REFERENCES, AND EFFECTIVE DATE	
Section 1.2, Scope	
Comment	One commentator requested a clearer definition of what is excluded from the scope of ASOP No. 38, noting that catastrophe models can be used to infer economic impacts beyond direct claims and that novel catastrophic perils may fall into a gray area in which ASOP No. 38 may or may not apply.
Response	The reviewers believe the guidance is appropriate and made no change in response to this comment. The reviewers note that section 1.2 does not limit the reason why a catastrophe model is used to perform actuarial services or whether the catastrophe model is a mature or novel catastrophe model.
Comment	One commentator suggested that section 1.2 should state that the guidance in the standard applies to the extent practicable within the scope of the actuary's assignment when the actuary is reviewing or evaluating a catastrophe model.
Response	The reviewers agree and made the change.
Comment	One commentator suggested that "review or evaluation" be removed from the scope of the standard or alternatively that the scope be changed to exclude an actuary performing a regulatory review.
Response	The reviewers believe the revised guidance is appropriate and made no change in response to this comment.

Comment	One commentator recommended that section 1.2 should state that the application of the standard be based on the actuary's professional judgement as to the materiality of the model output for the intended user.
Response	The reviewers believe the guidance is appropriate and made no change in response to this comment. The reviewers note that section 3.1 addresses materiality.
Comment	One commentator recommended that section 1.2 should state that the guidance in the standard applies only to the extent of the actuary's responsibilities and adopt the language from ASOP No. 56 section 1.2.
Response	The reviewers believe the guidance is appropriate and made no change in response to this comment.
Comment	One commentator suggested that the scope of the standard be expanded to include elements similar to ASOP No. 56.
Response	The reviewers believe the revised guidance is appropriate and made no change in response to this comment.
Comment	Several commentators questioned what constituted a conflict between ASOP No. 38 and ASOP No. 56 versus what constituted a difference and asked how potential conflicts are meant to be resolved.
Response	The reviewers believe the revised guidance is appropriate and made no change in response to this comment. The reviewers note that ASOP No. 1, *Introductory Standard of Practice*, section 4.4, states, "When an actuary believes that multiple ASOPs have conflicting provisions when applied to a specific situation and none provide explicit guidance concerning which governs, the actuary should apply professional judgment and may wish to contact the ABCD for confidential guidance on appropriate practice."

SECTION 2. DEFINITIONS	

Section 2.2, Catastrophe Model	
Comment	Two commentators suggested clarifying the definition of catastrophe model.
Response	The reviewers agree and made changes similar to those suggested by the commentators to improve clarity.
Comment	One commentator suggested a definition for "model" be added to ASOP No. 38.
Response	The reviewers agree and made the change.

SECTION 3. ANALYSIS OF ISSUES AND RECOMMENDED PRACTICES	

Section 3.1, Introduction	
Comment	One commentator suggested that the use of the term "validation" used in sections 3.1(d) and 3.5 be clarified to distinguish if the terms are being used differently.
Response	The reviewers believe the guidance is appropriate and made no change in response to this comment. The reviewers note section 3.1 introduces validation and section 3.5 provides details on the validation of catastrophe model output.

Section 3.2, Appropriate Reliance on Experts (now titled Catastrophe Models Developed by Experts)	
Comment	One commentator recommended changing "should consider" to "may consider" regarding the appropriate level of reliance on experts to be consistent with the corresponding language in ASOP No. 56, section 3.5.
Response	The reviewers believe the guidance is appropriate and made no change in response to this comment.
Comment	One commentator recommended changing the language in section 3.2(b) to mirror ASOP No. 56, section 3.5(b).
Response	The reviewers agree and made the change.
Comment	One commentator noted that this section, does not include the language of ASOP No. 56, section 3.5(d), which considers whether the science underlying the expertise is likely to produce useful models for the intended purpose.
Response	The reviewers believe the guidance is appropriate and made no change in response to this comment.
Comment	One commentator recommended that ASOP No. 38 be expanded to require disclosure of reliance on experts.
Response	The reviewers agree and made the change.
Comment	One commentator suggested that the ASOP be expanded to explicitly allow reliance on an expert to select, use, review, or evaluate the catastrophe model.
Response	The reviewers believe the guidance is appropriate and consistent with the suggestion, and made no change in response to this comment.
Section 3.5, Appropriate Validation (now titled Output Validation)	
Comment	One commentator requested that results derived from alternate models or methods, where available and appropriate, which is part of current ASOP No. 38, be added.
Response	The reviewers partially agree and modified the language.
Section 3.7, Reliance on Another Actuary	
Comment	One commentator suggested that ASOP No. 56 be added to the requirements for reliance on another actuary.
Response	The reviewers believe the revised guidance is appropriate and made no change in response to this comment.

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Statement of Compliance with Actuarial Standard of Practice 38
Minchong Mao, FCAS, MAAA

Background

Actuarial Standard of Practice 38 provides guidance to the actuary in using models that incorporate specialized knowledge outside the actuary's own area of expertise when developing an actuarial work product. When using such a model, the standard requires that the actuary perform five specific tasks, as described below using the numbering system of the standard. This document certifies that Minchong Mao, FCAS, MAAA, has performed these tasks for the catastrophe loss model(s) relied upon in the actuarial work product to which it is attached. It is intended that actuaries utilizing the actuarial work product in their insurance ratemaking efforts can rely on my model evaluation in accordance with Section 3.7 of the standard of practice. In July 2021, Actuarial Standards Board(ASB) adopted revision of ASOP No. 38. This document reflected the most current requirements in the 2021 revision.

Model Versions Covered by this document

- AIR Hurricane model for the United States v18 utilized in Touchstone versions 2020 (TS V8), 2021 (TS V9) and later, released in 2021

- AIR Severe Thunderstorm Model for the United States implemented in Touchstone version 10 and later, released in 2022

- AIR Winter Storm Model for the United States v1.5 implemented in Touchstone version 5, 6, 7, 8, 9,10 and later

- AIR Wildfire Model for the United States v2 implemented in Touchstone version 6, 7, 8, 9,10 and later

- AIR Earthquake and Fire Following Model for the United States v10.1 implemented in Touchstone version 6, 7, 8, 9,10 and later. This version included Time Dependent Earthquake Hazard Adjustment.

3.2 Appropriate Reliance on Experts

Catastrophe Models Developed by Experts—When selecting, using, reviewing, or evaluating a catastrophe model developed by experts, the actuary should take into account the following:

a. whether the individual or individuals who developed the catastrophe model are experts in the applicable field;

b. the extent to which the catastrophe model has been reviewed or validated by experts concerning aspects of the catastrophe model that could be material to the actuary's use of the catastrophe model; and

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c. whether there are industry or regulatory standards that apply to the catastrophe model or to the testing or validation of the catastrophe model, and whether the catastrophe model has been certified as having met such standards.

For those aspects of the model that are outside my area of expertise, I have relied on the list of experts provided by the modeler. Please see the modeler's ASOP 38 document and supporting documentation for additional information.

a. The individuals listed as employees of the modeler appear to be experts in their respective fields.

b. The modeler has provided documentation of reviews by outside experts. Many of these reviewers are well-recognized experts in their fields. I have reviewed the findings of the outside experts and found no significant differences of opinion with respect to the validity of the model.

c. Standards for catastrophe loss models have been promulgated by a few states. Most notably, the Florida Commission on Hurricane Loss Projection Methodology was created to review catastrophe loss models. The model(s) used in this work product, or derivatives thereof, have been certified by the Florida Commission on Hurricane Loss Projection Methodology.

3.3 Understanding of the Model

The actuary should be familiar with the basic components of the catastrophe model and understand both the user input and the catastrophe model output, as discussed below.

I have reviewed the modeler's ASOP 38 document and supporting documentation describing the model's components, input, and output, as well as other documentation, to comply with this requirement. In addition, I have specialized in actuarial applications of catastrophe model output since 2005.

3.3.1 Catastrophe Model Components—The actuary should be familiar with the basic components of the catastrophe model and have an understanding of how such components interrelate within the catastrophe model. In addition, the actuary should identify which fields of expertise were used in developing or updating the catastrophe model and should make a reasonable effort to determine if the catastrophe model is based on generally accepted practices within the applicable fields of expertise. The actuary should also be familiar with how the catastrophe model was tested or validated and the level of independent expert review and testing.

I am reasonably familiar with the basic components of the model and have a basic understanding of how such components interrelate with in the model. I have identified the fields of expertise used in developing and updating the model and have determined that the model is based on generally accepted practices within the applicable fields of expertise. I am reasonably familiar with how the model was validated and have reviewed the documentation of reviews by outside experts.

3.3.2 User Input—The actuary should take reasonable steps to confirm that the precision and accuracy of the user input are consistent with the intended purpose and should refer, as applicable, to ASOP No. 23, Data Quality, when selecting, using, or evaluating data used in the catastrophe model. Certain user input may be required to produce catastrophe model output for the specific application. User input can include assumptions or data. If the catastrophe model requires user input, the actuary should evaluate the reasonableness of the user input and should have an understanding of the relationship between the user input and catastrophe model output.

I understand the user input required to produce model output, including the level of detail required to produce results that are consistent with insurance ratemaking and risk management applications.

3.3.3 Catastrophe Model Output—The actuary should determine that the catastrophe model output is consistent with the intended purpose.

I have determined that the model output is consistent with the insurance ratemaking applications for which it was used. We most often use event loss detail in our work, so we are always careful that our results balance to the model's prepared exhibits.

3.4 Appropriateness of the Model for the Intended Application

The actuary should evaluate whether the catastrophe model is appropriate for the intended purpose and take into account the following:

3.4.1. Applicability of Historical Data—To the extent historical data are used in the development of the catastrophe model or the establishment of catastrophe model parameters, the actuary should take into account the adequacy of the historical data in representing the range of reasonably expected outcomes consistent with current knowledge about the phenomena being analyzed.

3.4.2. Developments in Relevant Fields—The actuary should make a reasonable effort to be aware of significant developments in relevant fields of expertise that are likely to materially affect the catastrophe model.

The catastrophe model(s) we have relied upon were developed for purposes related to the management of risk. I have evaluated the model(s) in light of available alternatives and determined that the catastrophe loss model is the most appropriate method of estimating expected catastrophe loss distributions for insurance ratemaking.

Some additional considerations include the following:

3.4.1. Applicability of Historical Data: Historical data is relied upon extensively in the development and validation of catastrophe loss models. Smoothing procedures are applied in cases where reasonably foreseeable events are underrepresented in the historical data.

3.4.2. Developments in Relevant Fields: Catastrophe loss models are typically updated on an annual basis in order to incorporate the most current scientific research and information from recent catastrophe events.

I have made a reasonable effort to be aware of significant developments in the relevant fields of expertise. In particular, meteorological studies related to the current period of elevated hurricane activity are important in determining which of a model's frequency assumptions should be utilized in insurance ratemaking applications involving hurricane-exposed risk portfolios. Aon maintains a documentation library containing current research in the science of catastrophe perils.

3.5 Output Validation

The actuary should validate that the output reasonably represents that which is being modeled. Depending on the intended purpose, output validation may include the following:

a. comparing output to those of an alternative model(s), where appropriate;

b. comparing the output produced by the catastrophe model with historical observations, if applicable;

c. comparing the consistency and reasonableness of relationships within the output; and

d. evaluating the reasonableness of changes in the output due to variations in the user input.

a. Aon conducts extensive testing of each model that we license whenever a new model is released. Output from Model output is checked for reasonability against other models and for consistency with the modeler's representations as to changes incorporated in the current version. I have reviewed the results of these tests and found the model used in this analysis to provide reasonable output.

b. Catastrophes, by their nature, involve significant uncertainty in the amount of insured losses they produce. In light of this uncertainty, the model has been shown to produce reasonable estimates of losses incurred from historical events.

I have reviewed the modeler's ASOP 38 document and supporting documentation describing comparisons of model output to historical observations and found that the model produces reasonable estimates.

c. I have reviewed the relationships among output results and found them to be consistent and reasonable.

d. Aon conducts extensive testing of each model that we license with respect to the sensitivity of model output to variations in the user input and model assumptions. I have reviewed the results of these tests and obtained an understanding of the model's sensitivity.

3.6 Appropriate Use of the Model

The actuary should evaluate the reasonableness of the catastrophe model output, considering the input and the intended purpose. The actuary should take into account the limitations of the catastrophe model and use professional judgment to determine whether it is appropriate to use the catastrophe model output. The actuary should also use professional judgment to determine whether any adjustments to the catastrophe model output are needed to meet the intended purpose. The actuary should disclose any such adjustments in accordance with section 4.1.

In my professional judgment, it is appropriate to use the model results, without adjustment, for the purposes of the actuarial work product to which this document is attached.

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3.7 Reliance on Another Actuary

The actuary may rely on another actuary who has selected, used, reviewed, or evaluated the catastrophe model. However, the relying actuary should be reasonably satisfied that the other actuary is qualified to select, use, review, or evaluate the catastrophe model in accordance with applicable ASOPs, and the catastrophe model is appropriate for the intended purpose. The actuary should disclose the extent of any such reliance.

Actuaries utilizing the actuarial work product to which this document is attached can rely on my complete evaluation of the model(s) used as described above. In doing so, they should document the extent of such reliance in their work.

3.8   Reliance on Data or Other Information Supplied by Others

When relying on data or other information supplied by others, the actuary should refer to ASOP No. 23 and ASOP No. 41, Actuarial Communications, for guidance.

We have discussed the treatment of exposure data in 3.3.2, we have reviewed the cat modelers' data quality and investigation procedures and can attest to their procedures being in compliance with ASOP No. 23, Data Quality. We have property communicated ASOP reviews with internal and external stakeholders, we can attest that we are in compliance with ASOP No. 41.

3.9   Documentation

The actuary should consider preparing and retaining documentation to support compliance with the requirements of section 3 and the disclosure requirements of section 4. If preparing documentation, the actuary should prepare such documentation in a form such that another actuary qualified in the same practice area could assess the reasonableness of the actuary's work and should document the steps taken to comply with this standard in light of proprietary aspects of the catastrophe model, if any.
The degree of such documentation should be based on the professional judgment of the actuary and may vary with the complexity and purpose of the actuarial services. In addition, the actuary should refer to ASOP No. 41 for guidance related to the retention of file material other than that which is to be disclosed under section 4.

We have retained documentation to support compliance with the requirements of section 3 and the disclosure requirements of section 4 in separate trade secret documents. The sensitivity testing to support section 3 involves detailed model results from several commercial vendors. Aon is required by our license agreements to protect modeling vendors' intellectual properties. The steps of Aon's ASOP 38 compliance work follow the ASOP 38 outline. I can attest that we are in compliance with ASOP No. 41.

AON

Minchong Mao FCAS, MAAA

May 2023

Statement of Compliance with Actuarial Standard of Practice 38
Minchong Mao, FCAS, MAAA

Background

Actuarial Standard of Practice 38 provides guidance to the actuary in using models that incorporate specialized knowledge outside the actuary's own area of expertise when developing an actuarial work product. When using such a model, the standard requires that the actuary perform five specific tasks, as described below using the numbering system of the standard. This document certifies that Minchong Mao, FCAS, MAAA, has performed these tasks for the catastrophe loss model(s) relied upon in the actuarial work product to which it is attached. It is intended that actuaries utilizing the actuarial work product in their insurance ratemaking efforts can rely on my model evaluation in accordance with Section 3.7 of the standard of practice.

Model Versions Covered by this document

- RMS North Atlantic Hurricane Model v23, released in 2023, implemented in RiskLink V23
- RMS North America Earthquake Model v17.0, released in 2017, implemented in RiskLink V17, V18,V18.1, V21, V23
- RMS Sever Convective Strom Model for the United States, released in 2014, implemented in RiskLink V17,V18, V18.1, V21, V23
- RMS Winter Storm Model for the United States, release in 2022, implemented in RiskLink V22,V23

3.2 Appropriate Reliance on Experts

An actuary may rely on experts concerning those aspects of a model that are outside of the actuary's own area of expertise. The experts relied upon may either be the experts who provided the model or other experts.

For those aspects of the model that are outside my area of expertise, I have relied on the list of experts provided by the modeler. Please see the modeler's ASOP 38 document and supporting documentation for additional information.

In determining the appropriate level of reliance, the actuary should consider the following:

a. whether the individual or individuals upon whom the actuary is relying are experts in the applicable field;

The individuals listed as employees of the modeler appear to be experts in their respective fields.

b. the extent to which the model has been reviewed or opined on by experts in the applicable field, including any known significant differences of opinion among experts concerning aspects of the model that could be material to the actuary's use of the model; and

The modeler has provided documentation of reviews by outside experts. Many of these reviewers are well-recognized experts in their fields. I have reviewed the findings of the outside experts and found no significant differences of opinion with respect to the validity of the model.

c. whether there are standards that apply to the model or to the testing or validation of the model, and whether the model has been certified as having met such standards.

Standards for catastrophe loss models have been promulgated by a few states. Most notably, the Florida Commission on Hurricane Loss Projection Methodology was created to review catastrophe loss models. The model(s) used in this work product, or derivatives thereof, have been certified by the Florida Commission on Hurricane Loss Projection Methodology.

3.3 Understanding of the Model

The actuary should be reasonably familiar with the basic components of the model and understand both the user input and the model output, as discussed below.

I have reviewed the modeler's ASOP 38 document and supporting documentation describing the model's components, input, and output, as well as other documentation, to comply with this requirement. In addition, I have specialized in actuarial applications of catastrophe model output since 2005.

3.3.1 Model Components—The actuary should be reasonably familiar with the basic components of the model and have a basic understanding of how such components interrelate within the model. In addition, the actuary should identify which fields of expertise were used in developing or updating the model, and should make a reasonable effort to determine if the model is based on generally accepted practices within the applicable fields of expertise. The actuary should also be reasonably familiar with how the model was tested or validated and the level of independent expert review and testing.

I am reasonably familiar with the basic components of the model and have a basic understanding of how such components interrelate with in the model. I have identified the fields of expertise used in developing and updating the model and have determined that the model is based on generally accepted practices within the applicable fields of expertise. I am reasonably familiar with how the model was validated and have reviewed the documentation of reviews by outside experts.

3.3.2 User Input—Certain user input may be required to produce model output for the specific application. The actuary should understand the user input that is required to produce the model output. This understanding includes the level of detail required in the user input to produce results that are consistent with the intended use of the model.

I understand the user input required to produce model output, including the level of detail required to produce results that are consistent with insurance ratemaking and risk management applications.

3.3.3 Model Output—The actuary should determine that the model output is consistent with the actuary's intended use of the model.

I have determined that the model output is consistent with the insurance ratemaking applications for which it was used. We most often use event loss detail in our work, so we are always careful that our results balance to the model's prepared exhibits.

3.4 Appropriateness of the Model for the Intended Application

The actuary should evaluate whether the model is appropriate for the particular actuarial analysis, and consider limitations of the model, modifications to the model, and the assumptions needed in order to apply the model output.

The catastrophe model(s) we have relied upon were developed for purposes related to the management of risk. I have evaluated the model(s) in light of available alternatives and determined that the catastrophe loss model is the most appropriate method of estimating expected catastrophe loss distributions for insurance ratemaking.

Some additional considerations include the following:

a. Applicability of Historical Data—To the extent historical data are used in the development of the model or the establishment of model parameters, the actuary should consider the adequacy of the historical data in representing the range of reasonably expected outcomes consistent with current knowledge about the phenomena being analyzed.

Historical data is relied upon extensively in the development and validation of catastrophe loss models. Smoothing procedures are applied in cases where reasonably foreseeable events are underrepresented in the historical data.

b. Developments in Relevant Fields—The actuary should make a reasonable effort to be aware of significant developments in relevant fields of expertise. The actuary should evaluate whether such developments are likely to materially affect the current actuarial analysis.

Catastrophe loss models are typically updated on an annual basis in order to incorporate the most current scientific research and information from recent catastrophe events.

I have made a reasonable effort to be aware of significant developments in the relevant fields of expertise. In particular, meteorological studies related to the current period of elevated hurricane activity are important in determining which of a model's frequency assumptions should be utilized in insurance ratemaking applications involving hurricane-exposed risk portfolios. Aon maintains a documentation library containing current research in the science of catastrophe perils.

3.5 Appropriate Validation

The actuary should evaluate the user input and the reasonableness of the model output, as discussed below.

3.5.1 User Input—With respect to the quality and availability of the user input data to be used in the model, the actuary should refer to ASOP No. 23, Data Quality.

The model input data for this analysis was supplied by the client. The data was reviewed for reasonableness in accordance with ASOP 23.

3.5.2 Model Output—In view of the intended use of the model, the actuary should examine the model output for reasonableness, considering factors such as the following:

a. the results derived from alternate models or methods, where available and appropriate;

In addition, Aon conducts extensive testing of each model that we license whenever a new model is released. Output from Model output is checked for reasonability against other models and for consistency with the modeler's representations as to changes incorporated in the current version. I have reviewed the results of these tests and found the model used in this analysis to provide reasonable output.

b. how historical observations, if applicable, compare to results produced by the model;

Catastrophes, by their nature, involve significant uncertainty in the amount of insured losses they produce. In light of this uncertainty, the model has been shown to produce reasonable estimates of losses incurred from historical events.

I have reviewed the modeler's ASOP 38 document and supporting documentation describing comparisons of model output to historical observations and found that the model produces reasonable estimates.

c. the consistency and reasonableness of relationships among various output results; and

I have reviewed the relationships among output results and found them to be consistent and reasonable.

d. the sensitivity of the model output to variations in the user input and model assumptions.

Aon conducts extensive testing of each model that we license with respect to the sensitivity of model output to variations in the user input and model assumptions. I have reviewed the results of these tests and obtained an understanding of the model's sensitivity.

3.6 Appropriate Use of the Model

Having completed the analysis described in sections 3.2–3.5 above, the actuary should use his or her professional judgment to determine whether it is appropriate to use the model results, subject to any appropriate adjustments. The actuary should disclose any such adjustments in accordance with section 4.3.

In my professional judgment, it is appropriate to use the model results, without adjustment, for the purposes of the actuarial work product to which this document is attached.

3.7 Reliance on Model Evaluation by Another Actuary

The actuary may rely on another actuary who has, for a particular model, conducted some or all of the evaluations and processes described in this standard. However, the relying actuary should be satisfied that the other actuary's evaluation was performed in accordance with this standard and is appropriate for the intended application. The actuary should document the extent of such reliance in accordance with section 4.1.

Actuaries utilizing the actuarial work product to which this document is attached can rely on my complete evaluation of the model(s) used as described above. In doing so, they should document the extent of such reliance in their work.

AON
Empower Results®

Minchong Mao FCAS, MAAA

Dec.1 2023

North Carolina Rate Bureau
Mobile Home Insurance Rate Filing
Support for Selected Reinsurance Structure

	Return Periods	
Layer	**Attachment**	**Exhaustion**
264M XS 626M	168	362
200M XS 426M	83	168
150M XS 276M	43	83
100M XS 176M	25	43
100M XS 76M	11	25

The table above shows the All Peril 50/50 RMSv23/TSv10 blend attachment and exhaustion points with Catastrophe LAE for the North Carolina Rate Bureau portfolio, along with the selected reinsurance program.

North Carolina Rate Bureau
Mobile Home Insurance Rate Filing
Reinsurance Program Summary

Reinsurance Layer	Rate-On-Line	Deposit Premium	Reinstatement Premium	Expected Total Premium	Expected Ceded Loss	Net Cost of Reinsurance
264M XS 626M	5.75%	15,180,000	88,853	15,268,853	1,560,078	13,708,775
200M XS 426M	8.23%	16,460,000	182,102	16,642,102	2,243,453	14,398,650
150M XS 276M	11.32%	16,980,000	338,537	17,318,537	3,051,962	14,266,575
100M XS 176M	15.29%	15,290,000	521,147	15,811,147	3,514,376	12,296,771
100M XS 76M	21.19%	21,190,000	1,322,729	22,512,729	6,556,036	15,956,692
Total		**85,100,000**	**2,453,368**	**87,553,368**	**16,925,905**	**70,627,463**

The table above shows indicated rates-on-line for the filing's reinsurance structure along with analysis of modeled catastrophe losses. Rate-on-Line values have been selected using the current Loss-On-Line approach, which is a benchmarking analysis done using reinsurance treaties placed by Aon.

Deposit Premium is Rate-On-Line * Layer Limit

Expected Ceded Loss and Expected Reinstatement premium are the average annual amounts of each based on a simulation of catastrophe losses subject to the reinsurance program.

Expected Total Premium = Deposit Premium + Expected Reinstatement Premium

Net Cost of Reinsurance = Expected Total Premium - Expected Ceded Loss

North Carolina Rate Bureau
Mobile Home Insurance Rate Filing
Support for Selected Catastrophe LAE Factor
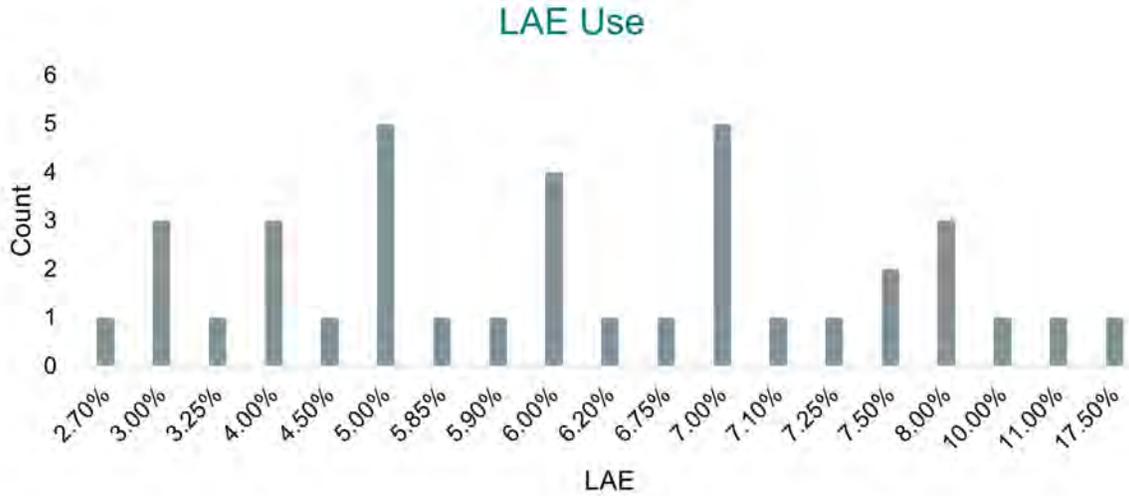
This chart shows Catastrophe LAE factors applied to modeled catastrophe event losses in AM Best SRQ Submissions by Aon clients in 2022.

- Factors were rounded to the nearest .05%
- A weighted average was used where factors varied by peril
- Multiple factors were counted where factors varied by company within a group
- Reflects all clients that included a provision for LAE

The mean factor is 6.30%, the median is 6.00%, and the mode is 5.00% & 7.00%.

North Carolina Rate Bureau
Reinsurance Cost Allocation
CY 2022
RMSv23/TSv10

Layer 1: 100M XS 76M

Peril/territory	MH(C)			MH(F)		
	Premium	Ceded AAL	Reins Margin	Premium	Ceded AAL	Reins Margin
HU	**46.83%**	**46.92%**	**46.79%**	**46.11%**	**46.38%**	**46.01%**
110	0.14%	0.14%	0.14%	0.21%	0.21%	0.21%
120	0.72%	0.73%	0.72%	3.36%	3.46%	3.32%
130	0.37%	0.38%	0.37%	0.65%	0.66%	0.64%
140	3.91%	4.06%	3.85%	7.88%	8.20%	7.75%
150	1.74%	1.78%	1.72%	1.36%	1.40%	1.35%
160	2.00%	2.03%	1.99%	1.80%	1.83%	1.79%
170	0.49%	0.49%	0.49%	0.38%	0.39%	0.38%
180	5.13%	5.10%	5.15%	4.05%	4.04%	4.06%
190	3.01%	2.98%	3.02%	2.59%	2.57%	2.60%
200	1.15%	1.11%	1.16%	2.02%	1.96%	2.04%
210	1.63%	1.61%	1.63%	1.38%	1.37%	1.39%
220	2.49%	2.44%	2.52%	2.47%	2.43%	2.49%
230	2.41%	2.37%	2.43%	3.97%	3.90%	3.99%
240	5.81%	5.74%	5.84%	3.13%	3.09%	3.15%
250	2.02%	1.97%	2.04%	1.98%	1.92%	2.01%
260	2.24%	2.24%	2.24%	1.08%	1.08%	1.08%
270	1.59%	1.58%	1.60%	0.80%	0.79%	0.81%
280	0.53%	0.53%	0.53%	0.27%	0.27%	0.27%
290	0.77%	0.76%	0.78%	0.94%	0.91%	0.95%
300	0.45%	0.45%	0.46%	0.69%	0.68%	0.70%
310	1.65%	1.69%	1.64%	1.18%	1.20%	1.18%
320	2.09%	2.11%	2.07%	1.23%	1.24%	1.22%
330	0.11%	0.12%	0.11%	0.10%	0.10%	0.10%
340	1.70%	1.73%	1.69%	0.88%	0.89%	0.87%
350	1.16%	1.20%	1.14%	0.64%	0.66%	0.63%
360	1.18%	1.24%	1.15%	0.85%	0.90%	0.83%
370	0.04%	0.04%	0.03%	0.03%	0.03%	0.03%
380	0.17%	0.19%	0.17%	0.10%	0.11%	0.10%
390	0.11%	0.11%	0.10%	0.07%	0.08%	0.07%
EQFF	**0.23%**	**0.20%**	**0.25%**	**0.00%**	**0.00%**	**0.00%**
OW	**1.04%**	**1.23%**	**0.96%**	**0.69%**	**0.81%**	**0.63%**
SS	**2.14%**	**1.92%**	**2.23%**	**2.61%**	**2.28%**	**2.74%**
WT	**0.21%**	**0.17%**	**0.23%**	**0.13%**	**0.10%**	**0.14%**
Grand Total	**50.46%**	**50.43%**	**50.47%**	**49.54%**	**49.57%**	**49.53%**

North Carolina Rate Bureau
Reinsurance Cost Allocation
CY 2022
RMSv23/TSv10

Layer 2: 100M XS 176M

Peril/territory	MH(C)			MH(F)		
	Premium	Ceded AAL	Reins Margin	Premium	Ceded AAL	Reins Margin
HU	**48.66%**	**48.93%**	**48.59%**	**46.60%**	**47.17%**	**46.44%**
110	0.10%	0.10%	0.10%	0.14%	0.14%	0.14%
120	0.61%	0.64%	0.61%	2.89%	3.05%	2.85%
130	0.29%	0.30%	0.29%	0.50%	0.52%	0.50%
140	3.55%	3.79%	3.48%	7.26%	7.78%	7.11%
150	1.47%	1.53%	1.46%	1.18%	1.22%	1.16%
160	1.93%	2.01%	1.91%	1.75%	1.82%	1.73%
170	0.43%	0.42%	0.43%	0.33%	0.33%	0.33%
180	5.09%	5.08%	5.09%	3.98%	3.99%	3.98%
190	3.01%	3.02%	3.01%	2.61%	2.62%	2.60%
200	1.15%	1.11%	1.15%	2.01%	1.96%	2.03%
210	1.68%	1.67%	1.68%	1.43%	1.43%	1.44%
220	2.71%	2.66%	2.73%	2.68%	2.64%	2.69%
230	2.56%	2.53%	2.57%	4.22%	4.18%	4.23%
240	6.37%	6.29%	6.39%	3.40%	3.35%	3.41%
250	2.27%	2.20%	2.29%	2.22%	2.14%	2.25%
260	2.55%	2.54%	2.55%	1.25%	1.23%	1.25%
270	1.84%	1.82%	1.85%	0.93%	0.91%	0.93%
280	0.64%	0.64%	0.64%	0.33%	0.33%	0.33%
290	0.89%	0.87%	0.90%	1.09%	1.04%	1.10%
300	0.51%	0.50%	0.51%	0.77%	0.75%	0.78%
310	2.00%	2.03%	2.00%	1.44%	1.45%	1.44%
320	2.42%	2.44%	2.42%	1.45%	1.45%	1.45%
330	0.13%	0.13%	0.13%	0.11%	0.12%	0.11%
340	1.86%	1.88%	1.85%	0.97%	0.97%	0.96%
350	1.18%	1.22%	1.17%	0.65%	0.67%	0.64%
360	1.16%	1.23%	1.14%	0.84%	0.89%	0.82%
370	0.04%	0.04%	0.03%	0.03%	0.03%	0.03%
380	0.14%	0.16%	0.14%	0.09%	0.10%	0.09%
390	0.08%	0.08%	0.08%	0.05%	0.06%	0.05%
EQFF	**0.19%**	**0.15%**	**0.21%**	**0.00%**	**0.00%**	**0.00%**
OW	**0.08%**	**0.10%**	**0.07%**	**0.04%**	**0.06%**	**0.04%**
SS	**1.95%**	**1.62%**	**2.04%**	**2.39%**	**1.91%**	**2.52%**
WT	**0.05%**	**0.03%**	**0.05%**	**0.03%**	**0.02%**	**0.03%**
Grand Total	**50.94%**	**50.84%**	**50.96%**	**49.06%**	**49.16%**	**49.04%**

North Carolina Rate Bureau
Reinsurance Cost Allocation
CY 2022
RMSv23/TSv10

Layer 3: 150M XS 276M

Peril/territory	MH(C)			MH(F)		
	Premium	Ceded AAL	Reins Margin	Premium	Ceded AAL	Reins Margin
HU	**49.40%**	**49.75%**	**49.32%**	**46.37%**	**47.10%**	**46.22%**
110	0.07%	0.07%	0.07%	0.11%	0.11%	0.11%
120	0.53%	0.56%	0.52%	2.51%	2.70%	2.47%
130	0.24%	0.24%	0.24%	0.42%	0.43%	0.41%
140	3.22%	3.53%	3.15%	6.64%	7.32%	6.49%
150	1.29%	1.34%	1.28%	1.05%	1.09%	1.04%
160	1.84%	1.96%	1.82%	1.67%	1.78%	1.65%
170	0.39%	0.37%	0.39%	0.30%	0.29%	0.30%
180	4.98%	4.99%	4.98%	3.87%	3.89%	3.86%
190	2.97%	3.02%	2.96%	2.59%	2.63%	2.58%
200	1.12%	1.09%	1.13%	1.97%	1.93%	1.98%
210	1.68%	1.67%	1.69%	1.44%	1.44%	1.44%
220	2.84%	2.80%	2.85%	2.80%	2.78%	2.81%
230	2.65%	2.62%	2.66%	4.37%	4.33%	4.38%
240	6.65%	6.56%	6.67%	3.54%	3.48%	3.55%
250	2.43%	2.35%	2.45%	2.38%	2.27%	2.41%
260	2.73%	2.72%	2.74%	1.35%	1.32%	1.35%
270	1.99%	1.97%	2.00%	1.01%	0.99%	1.01%
280	0.72%	0.72%	0.72%	0.37%	0.37%	0.37%
290	0.98%	0.95%	0.99%	1.20%	1.14%	1.21%
300	0.55%	0.53%	0.55%	0.83%	0.79%	0.84%
310	2.27%	2.29%	2.27%	1.64%	1.63%	1.64%
320	2.66%	2.66%	2.66%	1.60%	1.59%	1.61%
330	0.14%	0.15%	0.14%	0.12%	0.13%	0.12%
340	1.95%	1.96%	1.95%	1.02%	1.02%	1.02%
350	1.15%	1.19%	1.15%	0.63%	0.65%	0.63%
360	1.12%	1.19%	1.10%	0.80%	0.85%	0.79%
370	0.03%	0.04%	0.03%	0.03%	0.03%	0.03%
380	0.12%	0.13%	0.12%	0.07%	0.08%	0.07%
390	0.06%	0.06%	0.06%	0.04%	0.05%	0.04%
EQFF	**0.14%**	**0.08%**	**0.15%**	**0.00%**	**0.00%**	**0.00%**
OW	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**
SS	**1.80%**	**1.39%**	**1.89%**	**2.23%**	**1.65%**	**2.36%**
WT	**0.03%**	**0.02%**	**0.03%**	**0.02%**	**0.01%**	**0.02%**
Grand Total	**51.37%**	**51.24%**	**51.40%**	**48.63%**	**48.76%**	**48.60%**

North Carolina Rate Bureau
Reinsurance Cost Allocation
CY 2022
RMSv23/TSv10

Layer 4: 200M XS 426M

Peril/territory	MH(C)			MH(F)		
	Premium	Ceded AAL	Reins Margin	Premium	Ceded AAL	Reins Margin
HU	**49.93%**	**50.36%**	**49.86%**	**46.19%**	**46.93%**	**46.07%**
110	0.06%	0.05%	0.06%	0.08%	0.08%	0.08%
120	0.47%	0.50%	0.46%	2.23%	2.42%	2.20%
130	0.20%	0.21%	0.20%	0.35%	0.36%	0.35%
140	2.96%	3.29%	2.91%	6.15%	6.87%	6.03%
150	1.15%	1.19%	1.14%	0.94%	0.98%	0.93%
160	1.77%	1.91%	1.75%	1.61%	1.73%	1.59%
170	0.36%	0.33%	0.36%	0.28%	0.26%	0.28%
180	4.86%	4.85%	4.86%	3.76%	3.77%	3.75%
190	2.92%	2.97%	2.91%	2.55%	2.60%	2.54%
200	1.11%	1.08%	1.11%	1.95%	1.90%	1.96%
210	1.68%	1.67%	1.68%	1.44%	1.43%	1.44%
220	2.93%	2.91%	2.93%	2.88%	2.89%	2.88%
230	2.72%	2.69%	2.72%	4.49%	4.45%	4.50%
240	6.88%	6.80%	6.90%	3.65%	3.58%	3.66%
250	2.56%	2.49%	2.57%	2.50%	2.38%	2.52%
260	2.89%	2.87%	2.89%	1.43%	1.40%	1.43%
270	2.12%	2.10%	2.12%	1.07%	1.06%	1.07%
280	0.78%	0.79%	0.78%	0.41%	0.41%	0.41%
290	1.05%	1.02%	1.05%	1.29%	1.22%	1.30%
300	0.58%	0.55%	0.58%	0.87%	0.82%	0.88%
310	2.49%	2.52%	2.49%	1.80%	1.80%	1.80%
320	2.84%	2.85%	2.84%	1.73%	1.71%	1.73%
330	0.15%	0.16%	0.15%	0.13%	0.13%	0.13%
340	2.00%	2.01%	2.00%	1.05%	1.05%	1.05%
350	1.13%	1.17%	1.12%	0.61%	0.63%	0.61%
360	1.09%	1.17%	1.08%	0.78%	0.83%	0.78%
370	0.03%	0.04%	0.03%	0.03%	0.03%	0.03%
380	0.11%	0.12%	0.11%	0.07%	0.07%	0.07%
390	0.05%	0.06%	0.05%	0.04%	0.04%	0.04%
EQFF	**0.11%**	**0.06%**	**0.12%**	**0.00%**	**0.00%**	**0.00%**
SS	**1.66%**	**1.20%**	**1.73%**	**2.11%**	**1.45%**	**2.21%**
WT	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**
Grand Total	**51.70%**	**51.62%**	**51.71%**	**48.30%**	**48.38%**	**48.29%**

North Carolina Rate Bureau
Reinsurance Cost Allocation
CY 2022
RMSv23/TSv10

Layer 5: 264M XS 626M

Peril/territory	MH(C)			MH(F)		
	Premium	Ceded AAL	Reins Margin	Premium	Ceded AAL	Reins Margin
HU	**50.38%**	**50.90%**	**50.32%**	**45.98%**	**46.71%**	**45.89%**
110	0.05%	0.04%	0.05%	0.07%	0.06%	0.07%
120	0.42%	0.45%	0.42%	2.02%	2.18%	2.00%
130	0.18%	0.18%	0.18%	0.31%	0.32%	0.31%
140	2.74%	3.06%	2.70%	5.71%	6.42%	5.63%
150	1.06%	1.09%	1.05%	0.87%	0.90%	0.87%
160	1.71%	1.87%	1.70%	1.56%	1.70%	1.54%
170	0.35%	0.31%	0.35%	0.27%	0.24%	0.27%
180	4.78%	4.75%	4.78%	3.69%	3.68%	3.69%
190	2.87%	2.93%	2.86%	2.51%	2.58%	2.51%
200	1.07%	1.03%	1.07%	1.89%	1.83%	1.89%
210	1.69%	1.66%	1.69%	1.46%	1.43%	1.46%
220	2.97%	3.01%	2.97%	2.94%	2.99%	2.93%
230	2.71%	2.70%	2.71%	4.50%	4.47%	4.50%
240	7.11%	6.99%	7.12%	3.77%	3.67%	3.79%
250	2.65%	2.61%	2.65%	2.58%	2.48%	2.59%
260	3.05%	3.00%	3.05%	1.52%	1.47%	1.52%
270	2.23%	2.22%	2.23%	1.13%	1.12%	1.13%
280	0.84%	0.85%	0.84%	0.44%	0.44%	0.44%
290	1.11%	1.09%	1.11%	1.36%	1.30%	1.37%
300	0.60%	0.57%	0.60%	0.90%	0.84%	0.91%
310	2.68%	2.72%	2.67%	1.94%	1.94%	1.94%
320	3.03%	3.05%	3.03%	1.86%	1.84%	1.86%
330	0.16%	0.17%	0.16%	0.14%	0.14%	0.14%
340	2.04%	2.06%	2.04%	1.08%	1.09%	1.08%
350	1.07%	1.13%	1.06%	0.58%	0.61%	0.58%
360	1.06%	1.16%	1.05%	0.76%	0.82%	0.75%
370	0.03%	0.04%	0.03%	0.03%	0.03%	0.03%
380	0.10%	0.11%	0.09%	0.06%	0.07%	0.06%
390	0.04%	0.05%	0.04%	0.03%	0.03%	0.03%
EQFF	**0.13%**	**0.06%**	**0.13%**	**0.00%**	**0.00%**	**0.00%**
SS	**1.54%**	**1.06%**	**1.59%**	**1.98%**	**1.28%**	**2.06%**
Grand Total	**52.04%**	**52.01%**	**52.05%**	**47.96%**	**47.99%**	**47.95%**

North Carolina Rate Bureau
Reinsurance Margin Allocation
CY 2022
RMSv23/TSv10

Territory	MH(C)-A+D	MH(C)-B	MH(C)-C	MH(C)-Total	MH(F)-O	MH(F)-R	MH(F)-Total	MH C+F Total
110	60,327	4,266	14,599	**79,191**	118,200	174	**118,375**	**197,566**
120	439,050	24,932	87,235	**551,217**	2,276,351	475	**2,276,827**	**2,828,044**
130	237,851	21,243	75,960	**335,054**	547,029	45	**547,074**	**882,128**
140	2,044,166	154,552	364,799	**2,563,517**	5,143,255	1,650	**5,144,905**	**7,708,422**
150	1,080,791	101,461	276,142	**1,458,394**	1,095,789	1,542	**1,097,331**	**2,555,725**
160	1,139,434	104,576	160,891	**1,404,901**	1,246,037	258	**1,246,295**	**2,651,195**
170	256,782	25,810	31,412	**314,004**	242,527	73	**242,600**	**556,603**
180	2,970,249	292,814	342,702	**3,605,765**	2,810,898	3,125	**2,814,023**	**6,419,787**
190	1,691,883	191,433	206,237	**2,089,552**	1,810,698	2,495	**1,813,193**	**3,902,746**
200	669,180	57,436	72,927	**799,543**	1,400,118	0	**1,400,118**	**2,199,662**
210	983,269	105,195	97,035	**1,185,499**	1,012,336	783	**1,013,119**	**2,198,618**
220	1,658,738	153,273	168,034	**1,980,045**	1,947,130	298	**1,947,428**	**3,927,473**
230	1,559,423	138,762	156,984	**1,855,169**	3,049,123	749	**3,049,872**	**4,905,040**
240	3,902,813	408,768	357,877	**4,669,458**	2,483,259	2,839	**2,486,098**	**7,155,556**
250	1,424,302	142,396	133,449	**1,700,148**	1,661,582	2,112	**1,663,694**	**3,363,842**
260	1,617,885	176,832	128,487	**1,923,204**	946,129	228	**946,357**	**2,869,560**
270	1,173,420	110,006	100,906	**1,384,332**	698,691	793	**699,485**	**2,083,817**
280	418,332	43,352	34,599	**496,284**	257,911	232	**258,144**	**754,427**
290	590,278	50,111	45,838	**686,227**	837,735	470	**838,205**	**1,524,432**
300	330,777	26,773	25,873	**383,422**	580,485	306	**580,792**	**964,214**
310	1,330,549	139,765	108,350	**1,578,664**	1,131,604	588	**1,132,192**	**2,710,855**
320	1,572,324	168,248	132,139	**1,872,711**	1,122,215	815	**1,123,030**	**2,995,741**
330	84,138	9,679	7,211	**101,028**	86,493	27	**86,520**	**187,548**
340	1,156,202	120,894	97,772	**1,374,868**	713,195	646	**713,841**	**2,088,709**
350	697,091	70,249	56,462	**823,802**	446,220	467	**446,687**	**1,270,489**
360	707,291	69,878	59,264	**836,433**	589,401	465	**589,867**	**1,426,300**
370	21,670	1,830	1,363	**24,863**	20,594	10	**20,603**	**45,467**
380	83,895	7,330	6,271	**97,495**	57,364	31	**57,395**	**154,890**
390	49,779	4,832	4,936	**59,547**	39,030	30	**39,059**	**98,607**
Total	**29,951,889**	**2,926,696**	**3,355,752**	**36,234,337**	**34,371,398**	**21,727**	**34,393,126**	**70,627,463**

North Carolina Insurance Underwriting Association (NCIUA) -- Beach Plan
North Carolina Joint Underwriting Association (NCJUA) -- FAIR Plan

Catastrophe Bond Profit Multiples

Profit Multiples by Probability of Loss
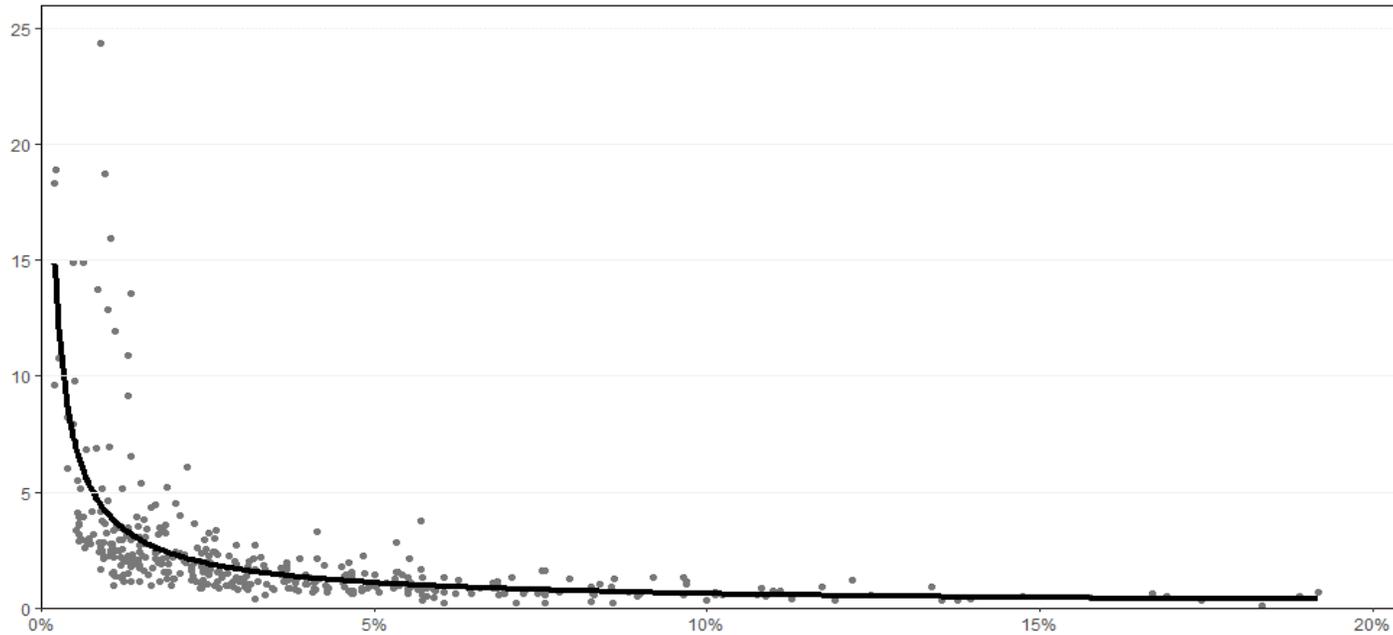
Source: Lane Financial LLC, Annual Securitization Reviews (http://lanefinancialllc.com) and Aon ILS Cat bond data.
Notes: Based on near-term cat bonds issued from January 2013 to March 2022.
             Includes all U.S. bonds with a probability of first loss between 0.05% and 20.0%; excludes bonds with no stated profit multiples.

Equation of the fitted curve:

$$y = 0.09154\, x^{-0.82495}$$

Equation to determine average Profit Multiple over specific interval:

$$\text{Avg PM} = \int_a^b 0.09154^{-0.82495}\, dx/(b-a)$$

North Carolina Insurance Underwriting Association (NCIUA) -- Beach Plan

Summary of 2023 Reinsurance Structure

Risk Finance Structure [1]	Attachment Point ($ Millions)	Exhaustion Point ($ Millions)	Coverage
Reinsurance Layer 1	$1,875	$2,100	85.5%
Reinsurance Layer 2	$2,100	$2,430	100.0%
Reinsurance Layer 3	$2,430	$2,630	100.0%
Reinsurance Layer 4	$2,630	$2,880	100.0%
Reinsurance Layer 5	$2,880	$3,380	100.0%
Reinsurance Layer 6	$3,380	$3,630	100.0%
Reinsurance Layer 7	$3,630	$3,805	100.0%

Source: https://www.ncjua-nciua.org/html/mbr_co.htm

Note: The above reinsurance covers aggregate losses for all Beach Plan accounts combined (Residential & Commercial).

(1) Each layer of reinsurance provides Annual Aggregate coverage, which implies that a reinstatement provision is not applicable.

North Carolina Insurance Underwriting Association (NCIUA) -- Beach Plan

Determination of Average Profit Multiple by Layer of Loss
($ in Millions)

Annual Aggregate Layer	Source of Funding	Total Beach Plan		Attachment Probability	Exhaustion Probability	Indicated Profit Multiple
		Layer Attachment	Layer Exhaustion [1]			
$0 to 908	Surplus	$0	$908	47.87%	6.84%	0.32
$908 to 1,875	Company Assessments	$908	$1,875	6.84%	3.17%	1.12
$1,875 to 2,100	Reinsurance Layer 1 + Company Assessments	$1,875	$2,100	3.17%	2.78%	1.66
$2,100 to 2,430	Reinsurance Layer 2	$2,100	$2,430	2.78%	2.29%	1.90
$2,430 to 2,630	Reinsurance Layer 3	$2,430	$2,630	2.29%	2.08%	2.15
$2,630 to 2,880	Reinsurance Layer 4	$2,630	$2,880	2.08%	1.83%	2.35
$2,880 to 3,380	Reinsurance Layer 5	$2,880	$3,380	1.83%	1.47%	2.71
$3,380 to 3,630	Reinsurance Layer 6	$3,380	$3,630	1.47%	1.32%	3.11
$3,630 to 3,805	Reinsurance Layer 7	$3,630	$3,805	1.32%	1.21%	3.37
$3,805 & Higher	Policyholder Surcharges	$3,805	$47,504	1.21%	0.0010%	14.21

(1) The Layer Exhaustion for the highest layer assumes 100K year return period and is consistent with prior year's analysis.

North Carolina Insurance Underwriting Association (NCIUA) -- Beach Plan
Residential Accounts Only

Illustration of How Hurricane Losses are Funded
Voluntary Market Assessments Limited to $1 Billion on All Beach Plan Accounts Combined
($ in Millions)

| Annual Aggregate Layer | Total Beach Plan | | | Beach Plan: Residential Share of Layer | Hurricane Losses Funded by: | | | |
	Layer Attachment	Layer Exhaustion	Total Losses in Layer		Beach Plan Surplus	Private Reinsurance	Assessment on Member Companies [1]	Policyholder Surcharges
$0 to 908	$0	$908	$908	$811.9	$811.9	-	-	-
$908 to 1,875	$908	$1,875	$967	$865.3	-	-	$865.3	-
$1,875 to 2,100	$1,875	$2,100	$225	$201.3	-	$172.1	$29.2	-
$2,100 to 2,430	$2,100	$2,430	$330	$295.2	-	$295.2	-	-
$2,430 to 2,630	$2,430	$2,630	$200	$178.9	-	$178.9	-	-
$2,630 to 2,880	$2,630	$2,880	$250	$223.6	-	$223.6	-	-
$2,880 to 3,380	$2,880	$3,380	$500	$447.3	-	$447.3	-	-
$3,380 to 3,630	$3,380	$3,630	$250	$223.6	-	$223.6	-	-
$3,630 to 3,805	$3,630	$3,805	$175	$156.5	-	$156.5	-	-
$3,805 & Higher	$3,805	$47,504	$43,699	$39,089.9	-	-	-	$39,089.9
Total					$811.9	$1697.3	$894.5	$39,089.9

(1) Total losses paid by Member Companies ($894.5 M) reflects the Residential portion of the $1 Billion Beach Plan assessment on the total Voluntary Market.

North Carolina Insurance Underwriting Association (NCIUA) -- Beach Plan
Residential Accounts Only

Determination of the Cost of Reinsurance Provided to the NCIUA by the Voluntary Market
Voluntary Market Assessments Limited to $1 Billion on All Beach Plan Accounts Combined
($ in Millions)

Annual Aggregate Layer	Beach Plan: Residential Share of Layer	Potential Assessment Paid by Member Companies [1]	Expected Losses [2] Total	Exposed [3]	Indicated Profit Multiple [4]	Cost of Funding Assessments [5]
$0 to 908	$811.9	-	$113.06	-	0.32	-
$908 to 1,875	$865.3	$865.3	$39.98	$39.98	1.12	$44.87
$1,875 to 2,100	$201.3	$29.2	$6.00	$0.87	1.66	$1.45
$2,100 to 2,430	$295.2	-	$7.46	-	1.90	-
$2,430 to 2,630	$178.9	-	$3.90	-	2.15	-
$2,630 to 2,880	$223.6	-	$4.34	-	2.35	-
$2,880 to 3,380	$447.3	-	$7.45	-	2.71	-
$3,380 to 3,630	$223.6	-	$3.12	-	3.11	-
$3,630 to 3,805	$156.5	-	$1.98	-	3.37	-
$3,805 & Higher	$39,089.9	-	$33.19	-	14.21	-
Total		$894.5	$220.48	$40.85		$46.32

(1) Page 4.
(2) From AIR & RMS hurricane models.
(3) Expected loss subject to Beach Plan assessments of Voluntary Market.
(4) See Page 3.
(5) = Exposed Expected Losses x Profit Multiple (based on Cat Bond data).

North Carolina Joint Underwriting Association (NCJUA) -- FAIR Plan

Summary of 2023 Reinsurance Structure

Risk Structure (1)	Attachment Point (in million)	Exhaustion Point (in million)	Coverage
Reinsurance Layer 1	$132	$216	100.0%

Source: https://www.ncjua-nciua.org/html/mbr_co.htm
Notes: The above reinsurance covers aggregate losses for all FAIR Plan accounts combined (Residential & Commercial).
    (1) Each layer of reinsurance provides Annual Aggregate coverage, which implies that a reinstatement provision is not applicable.

North Carolina Joint Underwriting Association (NCJUA) -- FAIR Plan

Determination of Average Profit Multiple by Layer of Loss
($ in Millions)

Annual Aggregate Layer	Source of Funding	Total FAIR Plan		Attachment Probability	Exhaustion Probability	Indicated Profit Multiple
		Layer Attachment	Layer Exhaustion [1]			
$0 to 17	Surplus	$0	$17	54.33%	22.20%	0.21
$17 to 132	Company Assessments	$17	$132	22.20%	7.98%	0.46
$132 to 216	Reinsurance	$132	$216	7.98%	5.17%	0.87
$216 & Higher	Company Assessments	$216	$6,425	5.17%	0.0010%	4.68

(1) The Layer Exhaustion for the highest layer assumes 100K year return period and is consistent with prior year's analysis.

North Carolina Joint Underwriting Association (NCJUA) -- FAIR Plan
Residential Accounts Only

Illustration of How Hurricane Losses are Funded
Reflecting Unlimited Industry Exposure to FAIR Plan Assessments
($ in Millions)

| | Total FAIR Plan | | | FAIR Plan: | Hurricane Losses Funded by: | | |
| | Layer | Layer | Total Losses | Residential | FAIR Plan | Private | Assessment on |
Annual Aggregate Layer	Attachment	Exhaustion	in Layer	Share of Layer	Surplus	Reinsurance	Member Companies
$0 to 17	$0	$17	$17	$15.7	$15.7	-	-
$17 to 132	$17	$132	$115	$106.2	-	-	$106.2
$132 to 216	$132	$216	$84	$77.5	-	$77.5	-
$216 & Higher	$216	$6,425	$6,209	$5731.5	-	-	$5,731.5
Total					$15.7	$77.5	$5,837.7

North Carolina Joint Underwriting Association (NCJUA) -- FAIR Plan
Residential Accounts Only

Determination of the Cost of Reinsurance Provided to the NCJUA by the Voluntary Market
Reflecting Unlimited Industry Exposure to FAIR Plan Assessments
($ in Millions)

Annual Aggregate Layer	FAIR Plan: Residential Share of Layer	Potential Assessment Paid by Member Companies [1]	Expected Losses [2]		Indicated Profit Multiple [4]	Cost of Funding Assessments [5]
			Total	Exposed [3]		
$0 to 17	$15.7	-	$4.35	-	0.21	-
$17 to 132	$106.2	$106.2	13.59	$13.59	0.46	$6.30
$132 to 216	$77.5	-	4.97	-	0.87	-
$216 & Higher	$5731.5	$5731.5	16.68	16.68	4.68	$78.00
Total		$5837.7	$39.60	$30.28		$84.30

(1) See Page 8.
(2) From AIR & RMS hurricane models.
(3) Expected loss subject to FAIR Plan assessments of Voluntary Market.
(4) See Page 7.
(5) = Exposed Expected Losses x Profit Multiple (based on Cat Bond data).

North Carolina Insurance Underwriting Association (NCIUA) -- Beach Plan
North Carolina Joint Underwriting Association (NCJUA) -- FAIR Plan
Residential Accounts Only

Determination of the Compensation for Bearing the Risk of Beach Plan & FAIR Plan Assessments
($ in Millions)

(1) Cost of Reinsurance Provided by the Voluntary Market to the Residential Accounts in the NCIUA (Beach Plan): $46.32

(2) Cost of Reinsurance Provided by the Voluntary Market to the Residential Accounts in the NCJUA (FAIR Plan): $84.30

(3) Total Cost of Reinsurance Provided by the Voluntary Market to the Residential Accounts in the NCIUA & NCJUA: $130.62

Policy Form	(4) Estimated 2023 Industry Written Premium @ Manual Rates	(5) = (4) / Total (4) % of Total Industry Premium	(6) = (3) x (5) Allocated Compensation for Risk of Assessment	(7) = (6) / (4) Compensation for Assessment Risk as % of 2023 Manual Premium
Homeowners	$4,022.1	86.9%	$113.49	2.8%
Dwelling Fire & EC	$401.9	8.7%	$11.34	2.8%
MobileHome	$205.2	4.4%	$5.79	2.8%
Total	$4,629.1	100.0%	$130.62	2.8%

(8) Estimated Market Share of Companies that Retain Assessment Risk   50%

(9) Retained Compensation for Assessment Risk Provision: 1.4%

(1) From Page 5.
(2) From Page 9.
(3) = (1) + (2)
(4) Industry Written Premium includes NCIUA and NCJUA.
(8) NCRB Property Rating Sub-Committee selection
(9) = (7) * (8)

PREFILED TESTIMONY
OF
GEORGE ZANJANI

MOBILE HOMEOWNERS MH(F) INSURANCE RATE FILING
NORTH CAROLINA RATE BUREAU
APRIL, 2024

I. Qualifications and Summary

Q: What is your name, occupation, and business address?

A: My name is George Zanjani. I am Professor of Finance and the holder of the Frank Park Samford Chair of Insurance at the University of Alabama. My business address is 1074 Alderwood Lane NE, Marietta, Georgia 30068.

Q: Please describe your educational and employment background.

A: A complete curriculum vitae is attached as Exhibit RB-21 with this testimony. To summarize, my undergraduate studies were at Stanford University from 1987-1990, where I earned an A.B./B.S. in Economics and Biology. I joined the commercial lines actuarial department of Fireman's Fund Insurance Companies in 1990 as an Assistant Actuarial Analyst. Upon leaving in 1994, I was a Senior Actuarial Analyst, an Associate of the Casualty Actuarial Society, and the head of the company's Workers Compensation actuarial unit. I did my graduate studies in Economics at the University of Chicago, earning a Ph.D. in 2000. I joined the Research Department of the Federal Reserve Bank of New York in the Capital Markets Function as a Research Economist in 2000, leaving as a Senior Economist in 2008. I joined the Robinson College of Business of Georgia State University in 2008 as an Associate Professor of Risk Management and Insurance and was honored as the inaugural holder of the AAMGA Distinguished Chair in Risk Management and Insurance in 2011. I started my current position in 2017.

Q: Please elaborate on some of your professional activities.

A: My professional career has been focused on insurance. After four years of actuarial work in commercial lines insurance, my dissertation addressed the economics of insurance pricing. I specialized on insurance issues while at the Federal Reserve Bank of New York. In particular, I served for the Bank on the Presidential Working Group on Financial Markets during its review of the renewal of the Terrorism Risk Insurance Act in 2006 and on the Committee on the Global Financial System Task Force on Institutional Investors, Global Savings, and Asset Allocation.

My academic service activities include 1) service as referee for various academic journals, 2) previous service as an associate editor of the *Journal of Insurance Issues*, and 3) (current) service as a senior editor for the *Journal of Risk and Insurance* and as an associate editor for *Insurance: Mathematics and Economics*. In addition, I have served on the Board of the American Risk and Insurance Association and served as President of that association. I have also served as President of the Risk Theory Society.

As an academic, I continue to write on insurance pricing, participate in academic conferences on insurance, and engage in various sponsored research and consulting activities related to insurance. The latter activities include three research projects sponsored by the Casualty Actuarial Society during the last decade and a project on the financial crisis and the insurance industry sponsored by the Society of Actuaries in 2009. In addition, I have taught various courses at the undergraduate and graduate levels over the past decade, including classes on financial risk management, risk modeling, and property-casualty insurance.

Q: Have you published any papers or books?

A: Yes. I have published various articles, book chapters, reviews, and white papers on insurance pricing and other aspects of insurance markets. Published or forthcoming work includes articles on insurance topics in the *American Economic Review*, *Insurance: Mathematics and Economics*, the *Journal of Banking and Finance*, the *Journal of Financial Economics*, the *Journal of Public Economics*, the *Journal of Risk and Insurance*, *Management Science, North American Actuarial Journal,* and *Variance.* My co-authors and I have two chapters in the 2013 edition of the Handbook of Insurance, one on capital allocation for insurance companies, and the other on the financial pricing of insurance. Two papers have won awards for their contributions to the field of actuarial science: I received the 2010 ARIA award from the Casualty Actuarial Society and shared the 2015 Charles A. Hachemeister Prize (also from the Casualty Actuarial Society) with a co-author.

Q: Are you a member of any professional organizations?

A: I am a member of the American Economic Association, the American Finance Association, the American Risk and Insurance Association, and the Risk Theory Society. I am also an Associate of the Casualty Actuarial Society. I served on the Board of Directors of the American Risk and Insurance Association from 2007 to 2014 and served as President in 2012-2013. I served as President of the Risk Theory Society in 2012.

Q: Have you ever testified in insurance rate regulatory proceedings?

A: Yes. I have offered testimony in Workers Compensation insurance rate filings in Florida (2015 and 2017), Massachusetts (2020, 2022, and 2023), and Virginia (2016). In addition, I have supplied testimony for various rate filings in North Carolina starting in 2019, including Workers Compensation, Private Passenger Auto, Homeowners, Mobile Homeowners, Flood, and Dwelling.

Q: What was the nature of your testimony in those previous cases?

A: In the Florida, Massachusetts, and Virginia cases, I offered testimony on the underwriting profit factors used in the rates. Specifically, I evaluated the suitability of the methods and assumptions used to develop those factors, as well as whether the rate of return on capital implied by those factors was reasonable. For the North Carolina filings, I estimated the rate of return on capital implied by the selected underwriting profit factors and assessed whether that rate of return was reasonable.

Q: What is the purpose of your testimony in this proceeding?

A: I was asked by the North Carolina Rate Bureau, as a financial economist with expertise in insurance, 1) to assist the Bureau committee with the underwriting profit factor selection, 2) to determine the expected return on insurance net worth implicit in the filing, and 3) to assess whether the expected return on net worth constitutes a reasonable rate of return and thus whether the selected underwriting profit factor satisfies North Carolina's statutory requirements.

Q;   Please summarize the main findings of your testimony.

A: The first task was to determine the range for a reasonable rate of return on capital. I started by creating a set of estimates of the cost of insurance equity relevant for the North Carolina Mobile Homeowners insurance market. I consulted various third-party estimates of the cost of equity for the property-casualty insurance industry. I also generated my own estimates using a single-factor risk premium approach, where the cost of equity was determined by 1) the historical excess return of the overall stock market over bonds, 2) the historical correlation of the equity prices of the firms serving the North Carolina Mobile Homeowners market with the overall stock market, and 3) the current level of bond yields. Finally, I adjusted the cost of equity to account for the significant presence of private companies in the North Carolina market. The cost of equity estimates resulting from this exercise ranged from about 8.11% to 23.7%.

Next, I calculated a weighted average cost of capital (WACC) by estimating the fraction of debt in the typical insurance holding company capital structure and weighting together the cost of equity with cost of debt based on this fraction. The resulting range for the WACC was about 7.45% to 19.9%.

The next task was to determine the projected rate of return on capital associated with the selected underwriting profit provision. Using a pro forma return model similar to that used in previous filings, I analyzed how the selected underwriting profit provisions used in the filing translate into expected returns on net worth. Consistent with previous filings, and with North Carolina law stipulating that the investment income earned on capital and surplus is not to be considered in determining the appropriate rate of return for the insurance industry, I refer to the expected return on net worth without including investment income on capital and surplus as the *statutory return*. When calculating the expected return on net worth including investment income earned on capital and surplus, I refer to the figure as the *total return.* My calculations for Mobile Homeowners (F) are detailed in Exhibit RB-22 and are summarized below:

Return Definition	Return on Net Worth
Statutory Return	7.09%
Total Return	11.49%

I next considered two adjustments to the model that I believe produce a more accurate representation of the rate of return produced by the selected underwriting profit factor. First, I

adjusted the asset portfolio allocations (across bonds, stocks, and various other investments) to reflect the allocations actually supporting North Carolina Mobile Homeowners business, rather than the overall average industry allocations. Second, I adjusted the prospective portfolio yields to reflect current market conditions, as opposed to the average of current market yields and embedded yields. The combined effect of these changes was to increase the statutory return to 7.12% and the total return to 11.67%.

I then compared the projected returns on capital associated with the selected underwriting factor with the cost of equity and WACC ranges described above. The projected statutory return fell below both ranges of estimates, and the projected total return fell comfortably within the range of cost of equity estimates and within the range of WACC estimates. These findings still hold after adjusting the portfolio allocations and prospective yields as described above. I therefore conclude that the expected return implied by the underwriting profit provision used in the filing is not excessive on a statutory return basis, and it is reasonable and not excessive on a total return basis.

II.   Expected Return on Net Worth

Q: In general terms, how did you determine the expected return on net worth implied by the underwriting profit provision used in the filing?

A: I used a *pro forma* return model similar to that used in previous filings in North Carolina. The model accounts for underwriting income, installment payment income, investment income on unearned premium and loss/loss adjustment expense (LAE) reserves, and taxes as a percentage of premium. Total after-tax income from these sources (as a percentage of premium) is then related to net worth (as a percentage of premium) to obtain an expected return on net worth.

Q: What do you mean by *pro forma*?

A: The model is *pro forma* in the sense that it assumes 1) that the indicated rate change will be implemented and 2) that all loss, expense, and investment return realizations will coincide with their projected expected values.

The results of the model and supporting information are presented in Exhibit RB-22.

Q: Could you state what you mean by "net worth"?

A: Net worth is the book value of equity of a company under Generally Accepted Accounting Principles (GAAP) rather than Statutory Accounting Principles (SAP).

Q: Did you account for investment income on capital and surplus in calculating the expected return?

A: It is my understanding that North Carolina law provides that insurance rates are to be set such that those rates are expected to provide a return to insurers that is equal to the returns of industries of comparable risk and that, in calculating that expected return, the investment income on capital and surplus is to be excluded from consideration. Therefore, I present the

expected return projected to result from the selected underwriting profit provision excluding investment income on capital and surplus. However, for informational purposes, I also present the expected return projected to result from the selected underwriting profit provision including investment income on capital and surplus. It is also my understanding that a revision to the ratemaking statutes will become effective after this filing is proposed to become effective providing that investment income on capital and surplus is to be considered. The information I present in my exhibits demonstrates that the selected underwriting profit provision would comply with North Carolina law when that change in the law becomes effective.

Q: Would you please elaborate on the elements of the return and how they are calculated?

A: The return is composed of underwriting profit (Line 2 of Exhibit RB-22, Pages 1 and 1A), installment fee income (Line 3 of Exhibit RB-22, Pages 1 and 1A) and investment gain on insurance transaction (Line 7 of Exhibit RB-22, Pages 1 and 1A). In the calculation that includes investment income on surplus for informational purposes, I additionally include investment gain on surplus (Line 8 of Exhibit RB-22, Page 1A). (Please note that, in my exhibits and sometimes in my testimony, I refer to investment income on surplus as a shorthand reference to investment income on capital and surplus.) All of the foregoing income components are adjusted for taxes. The components are discussed in greater detail below:

Underwriting profit and installment fee income - As a matter of arithmetic and definition, the underwriting profit as a percentage of premium matches the underwriting profit provision selected by the NCRB. It is the percentage of premium left over after accounting for the loss and expense provisions, with the projected loss and LAE ratio and fixed expense ratios being adjusted to reflect the indicated rate change. Installment fee income is based on the average installment charges as a percentage of premium over the past five years (Exhibit RB-22, Page 3). The underwriting profit income and installment fee income are both assumed to be taxed at the current corporate rate of 21% (Line 4 of Exhibit RB-22, Pages 1 and 1A), as revised in the Tax Cut and Jobs Act of 2017. I also account for additional tax liabilities relating to IRS rules regarding the treatment of unearned premium reserves and of loss reserves (Line 5 of Exhibit RB-22, Pages 1 and 1A). Details of the calculation of these additional tax liabilities are found on Pages 4 to 6 of Exhibit RB-22.

Net Investment Gain on Insurance Transaction – This portion of the return reflects investment income on investible funds generated by the insurance transaction. Specifically, this quantity is calculated as the product of an investment yield and the average loss/LAE and unearned premium reserves that are actually held at the insurance company. An adjustment is made for investment income on agents balances (specifically, to account for the fact that agents balances, which are premiums held by agents and not yet remitted to the company, are not available for investment by the insurance company). I also adjust for investment income on reinsurance balances, accounting for the additional income that the company receives on funds that have not yet been remitted to the reinsurer, as well as the investment income that it is not able to collect on funds that have not yet been recovered from the reinsurer. The details of the estimation of investible reserves and the investment income generated from those reserves are found on Pages 7 to 9 of Exhibit RB-22, with the adjustments for balances shown on Pages 1 and

1A. The tax liability is based on a weighted average of estimated tax rates on the different sources of investment income, with the weights based on the composition of the overall investment portfolio.

Investment Gain on Surplus – This portion of the return would reflect investment income generated from surplus. The investment yield is applied to investible surplus, the amount of which is based on the ten-year average premium-to-surplus ratio for groups writing Mobile Homeowners insurance in North Carolina from Page 14 of Exhibit RB-22. The tax liability is again based on a weighted average of estimated tax rates on the different sources of investment income, with the weights based on the composition of the overall investment portfolio.

These components of after-tax return, all denominated as a percent of premium, are then summed and related to net worth. This is accomplished by multiplying the returns as a percent of premium by the product of the premium-to-surplus ratio from Page 14 of Exhibit RB-22 and the inverse of the industry-wide net worth-to-surplus ratio from Page 15 of Exhibit RB-22.

Q: Please explain how the investment yield is calculated.

A: My understanding is that the accepted approach in North Carolina, based on a decision by the Commissioner in the 1990's, is to estimate the investment yield as an average of the "embedded yield" based on the industry statutory annual statement reports and a "current yield" based on current market rates. I have followed this convention in the analysis presented in Exhibit RB-22, though I contemplate the consequences of this convention in more detail later in my testimony.

For the current yield, I start with the overall weighted average invested asset portfolio for the North Carolina insurance market (using total North Carolina DPW for weights) and use various sources to estimate the current market yields for those assets. Sources for current market rates, and a summary of the overall calculation, are provided on Page 11 of Exhibit RB-22. For each of the bond subcategories, I obtain a maturity distribution for the North Carolina industry portfolio in that subcategory from the Schedule D summary exhibits and match each maturity level from the exhibits to a corresponding bond yield of similar maturity, so that the average yield shown on Page 11 is a weighted average across maturities according to the North Carolina industry portfolio. The overall pre-tax current yield on the industry portfolio as thus determined is 6.40%. The embedded yield calculations, based on the actual investment income reported by the industry, are shown on Pages 12 and 13 of Exhibit RB-22; the pre-tax embedded yield is 3.86%. For the pro forma calculations, I average these two figures to obtain 5.13% (shown on Page 10 of Exhibit RB-22).

The tax liability for investment income is determined for each asset class, reflecting tax advantages as appropriate on municipal bond interest, preferred and common stock dividends, and capital gains on stock. The expected return on equity is split into a capital gain and dividend component, for tax purposes, based on the experience of the S&P 500 over the 1998-2023 period.

Q: What is the expected return on net worth?

A: To calculate the implied return on insurance company equity, components of after-tax return are summed and related to net worth, which, as a percentage of premium, is calculated based on the product of the premium-to-surplus ratio from Page 14 of Exhibit RB-22 and the inverse of the industry-wide net worth-to-surplus ratio from Page 15 of Exhibit RB-22. This approach indicates that the selected underwriting profit factor of 6.5%, if achieved, would yield an expected statutory return on net worth of 7.09% (without including investment income on surplus) and a total return on net worth of 11.49% (when including investment income on surplus).

Q: Have you considered the impact of any other alternative assumptions on your estimates?

A: Yes, I have considered the impact of an alternative investment yield calculation.

Specifically, I considered the combined impact of two changes.

First, I based the asset distribution on a premium-weighted average of the portfolio allocations used by the companies writing Mobile Homeowners insurance in North Carolina. The pro forma model relied on the weighted average invested asset distribution for the North Carolina insurance industry. While I have followed this convention in Exhibit RB-22, the assumption may not be suitable for the case of Mobile Homeowners because the North Carolina industry portfolio reflects heavy common stock allocations by certain personal lines carriers and other companies that do not underwrite Mobile Homeowners. The high common stock allocation tends to inflate the estimated investment yields, particularly current yields, where the expected rate of return on common stock is much higher than typical bond yields (see Page 11 of Exhibit RB-22). Basing the allocation assumption on the portfolios of the companies actually writing Mobile Homeowners business in North Carolina, in my opinion, offers a much closer approximation to the average investment portfolio supporting North Carolina Mobile Homeowners underwriting.

Second, I based the investment yield solely on the current yield. The practice of averaging embedded yields with current yields makes little difference when the yields are relatively close together. But there is a significant divergence between the current yields on investments and embedded yields, with the pre-tax current yield being more than 250 basis points higher than the embedded yield. The current yield, in my opinion, is the better indicator of investment yields for a prospective ratemaking exercise, where the relevant questions concern the terms on which money will be invested today and in the future.

The combined effect of these two changes is to increase the statutory return to 7.12% and the total return to 11.67% (including investment income on surplus).

Q: How was the underwriting profit factor determined?

A: The Bureau selected the 6.5% provision. I participated in the Bureau's Mobile Home Subcommittee meeting for the discussion of the profit portion of the rate review. I described for the committee my pro forma profit analysis and provided an array of underwriting profit provisions and their associated returns on net worth, both without including investment income

on surplus and including investment income on surplus. The returns shown in that array spanned the range for the cost of capital that I had provided. Following my presentation and the committee discussion, the committee selected the underwriting profit factor.

III.   Rate of Return on Capital

Q: What steps did you take in the course of assessing whether the returns described above would produce a reasonable rate of return on equity?

A: I first established ranges for reasonable estimates of the cost of capital. I then compared the estimated statutory and total returns on net worth determined in Section II above to these cost of capital ranges.

Q: How did you establish ranges for reasonable estimates of the cost of capital?

A: The cost of capital for an industry is a difficult figure to pin down, and part of my approach is based on a belief in the wisdom of considering estimates from a variety of sources. I started by gathering various third-party estimates of the cost of capital for property-casualty firms associated with publicly traded holding companies. I also made an independent set of estimates of the same tailored specifically for the North Carolina Mobile Homeowners market. I then made adjustments to all of these estimates to account for the presence of private companies in the North Carolina market.

Q: Please describe the third-party estimate sources and methodologies.

A: Kroll (formerly Duff & Phelps) and Damodaran Online (an open-access website maintained by Aswath Damodaran, a valuation expert affiliated with New York University) both publish estimates for the property-casualty industry. Kroll updates the estimates quarterly (the estimates reported below are from 9/30/2023), while Damodaran Online updates the estimates annually (1/1/2024).

Kroll reports estimates from a variety of methodologies. Some estimates are produced using factor models, where the industry's sensitivity to a pricing factor (or sensitivities to a set of factors) are measured and used to generate a cost of capital. For example, single factor models (such as the CAPM) typically mark the overall stock market return in excess of a "base" fixed income return as the pricing factor. The cost of capital is generated in this case by estimating a risk premium for each factor, adjusting that risk premium to account for the sensitivity of the industry in question to that factor, and then adding the adjusted risk premium to the current yield of the "base" fixed income instrument to produce a cost of capital. In addition to CAPM estimates, Kroll also reports a "CAPM + size premium" estimate to recognize the higher cost of capital endured by smaller firms and thus correct for the average size of firms within an industry. The "Buildup Method" employs a related approach, adding a size premium and an industry premium to the standard market risk premium. The Fama-French-5-factor model extends the single risk factor framework of the CAPM to a five factor risk framework, thus pricing an industry's equity on the basis of its sensitivity to four additional factors in addition to overall market returns. Kroll also utilizes discounted cash flow (DCF) models, where free cash flow or dividends are forecasted into the future, with the cost of capital estimate being the implied discount rate on the future cash flows that explains the current equity valuation. In

general, the two classes of methods---factor models and DCF models---are perhaps the two most widely accepted and widely deployed methods for estimating the cost of equity.

Damodaran reports estimates from a single-factor CAPM model. However, rather than estimating the risk premium associated with the stock market on the basis of simple averages of historical excess returns (as is typically done), he attempts to modify the premium to account for the current level of stock market valuation. This distinction is one example of the substantial variation in implementation of factor models, which can have significant effects on the estimates. There is also substantial methodological variation in implementation of the DCF model, which is estimated with different time period stages, with time-varying growth rates. All of this underscores the importance of consulting multiple sources of estimates and testing sensitivities where possible. Damodaran uses a 10-year Treasury yield as the risk-free rate in his model, and I set the rate to 4.253% (the three month average up to 1/3/2024) to be consistent with the other parts of the analysis.

The approaches described above all produce estimates of the cost of equity. This cost of equity is then weighted together with an estimated cost of debt for the industry to produce a WACC for publicly traded firms. The weights are based on the composition of the capital structure (equity versus debt) for the industry.

Q: Please describe how you derived your independent estimates of the cost of equity capital for publicly traded firms.

A: I used a single factor model, also referred to as a "risk premium" approach in previous filings in North Carolina. This approach estimates the cost of equity as

$$r + \beta * (ERP)$$

where r is the current yield on a reference fixed income instrument, ERP is the estimated expected excess return of the stock market over that fixed income yield, and β is the estimated covariation between the equity of the property-casualty industry and the overall stock market (more precisely, the covariance of property-casualty equities with the S&P 500, divided by the variance of the S&P 500).

For the reference interest rate, I tried four different fixed income assets---the 3-month Treasury Bill, the 10-year Treasury Note, the Moody's Seasoned Aaa Corporate Bond Index, and the Moody's Seasoned Baa Corporate Bond Index. In each case, I estimated the equity risk premium as the average excess return of the S&P 500 over the return on the reference fixed income asset over the 1928-2023 period. To calculate the average returns, I used the formula from Blume (1974)[1] by weighting together the arithmetic average and the geometric average, as in:

$$\left[\frac{N-T}{N-1}(1+\pi_A) + \frac{T-1}{N-1}(1+\pi_G)\right]^{\frac{1}{T}}$$

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[1] Blume, M.E. (1974), "Unbiased Estimates of Long-Run Expected Rates of Return," *Journal of the American Statistical Association* (September), pp. 634-8.

where N is the sample size, T is the return horizon (corresponding to the maturity of the fixed income asset), π_A is the arithmetic average return in the sample, and π_G is the geometric average return in the sample.

For β (beta), I estimated a weighted average beta for the North Carolina Mobile Homeowners market. For each publicly traded holding company associated with an operating subsidiary underwriting Mobile Homeowners insurance in North Carolina in 2022, I pulled the beta provided by S&P Global (based on 1-year and 3-year daily returns). I then calculated a weighted average based on 2022 North Carolina Mobile Homeowners DPW.

Given current yields for the reference fixed income assets and estimates for the equity risk premium and beta, I then calculate a cost of equity according to the formula given above.

Next, I estimated a WACC for the North Carolina market. For the capital structure, I estimated a weighted average debt percentage for the North Carolina Mobile Homeowners market. For each publicly traded holding company, I calculated the percentage of debt in the capital structure based on the latest fiscal year report. For the cost of debt, I used the figure from Damodaran Online, based on a 4.253% 10-year Treasury rate.

Q: What were the results?

A: The following table lists the cost of equity and the WACC for publicly traded companies, including the estimates I produced and those reported by Kroll and Damodaran Online for the property-casualty industry.

Cost of Capital for Publicly Traded Companies							
Source	Method	Current Yield (1/3/2024)	Equity Risk Premium	Cost of Equity		WACC	
Kroll	CAPM			8.7%		7.9%	
Kroll	CAPM + Size Premium			9.1%		8.2%	
Kroll	Build-Up			9.7%		8.7%	
Kroll	Fama-French 5-factor			9.8%		8.8%	
Kroll	DCF (1-stage)			20.9%		17.6%	
Kroll	DCF (3-stage)			22.4%		18.8%	
Damodaran Online	Implied Premium			7.65%		7.07%	
				Low	High	Low	High
Zanjani	Risk Premium over T-Bill	5.49%	8.17%	11.24%	11.62%	10.08%	10.40%
Zanjani	Risk Premium over T-Note	4.25%	6.52%	8.84%	9.15%	8.09%	8.35%
Zanjani	Risk Premium over Aaa Bond	5.05%	5.64%	9.02%	9.28%	8.24%	8.46%
Zanjani	Risk Premium over Baa Bond	5.98%	4.40%	9.08%	9.29%	8.29%	8.46%

I have also shown the current yield and equity risk premium elements for each of my own estimates to facilitate reconstruction. Other parameters I used were calculated as described above: 1) the weighted average beta for the North Carolina industry (0.7034 to 0.7504), 2) the cost of debt (4.40%), and 3) the percentage of debt in the capital structure (16.86%).

To illustrate, the higher cost of equity for my "Risk Premium over T-Bill" method is:

$$5.49\% + 0.7504 \times 8.17\% = 11.62\%,$$

and the WACC is:

$$(1 - .1686) \times 11.62\% + .1686 \times 4.40\% = 10.40\%.$$

Note that the estimates for capital structure and the cost of debt differ across sources, so the relationship between the cost of equity and the WACC for Kroll and Damodaran Online will not follow the exact formula listed above.

Q: Do you believe any adjustments are necessary to the estimated cost of equity in the context of this filing?

A: Yes. All of the foregoing estimates are based on the data of publicly traded companies, which have the easiest access to financing and thus the lowest costs of capital. However, I found that operating companies affiliated with publicly traded holding companies wrote only 82.1% of the 2022 Mobile Homeowners direct premiums written for North Carolina. The remainder was underwritten by companies associated with private, often mutual, ownership---a segment well known to have more difficulty in accessing the capital markets. The industry average cost of equity needs to be adjusted upward to account for this non-public ownership.

Q: How much higher is the cost of equity for non-public firms?

A: Research dating back at least as far as the 1960's has demonstrated that private equity trades at a substantial discount to public equity. The discount is thought to derive from a variety of factors, including the illiquid nature of private equity stakes (also known as a "lack of marketability") as well as information, monitoring, and control issues. The discount translates into a higher cost of equity. For example, if a public firm's cost of equity is estimated at 10% and the equity of a comparable private firm is selling at a 20% discount to that of the public firm, the private firm's cost of equity would be estimated as:

$$12.5\% \ = \ 10\% \ / \ (1 - 20\%)$$

The discount is difficult to estimate. Exhibit RB-23 summarizes some of the academic research on the private firm discount. Studies have taken a variety of approaches to measurement. "IPO" studies compare the prices of pre-IPO share transactions in a private company with post-IPO share prices after the company is public. "Acquisition" studies compare the valuations of acquired private companies versus the valuations of acquired public companies. "Restricted stock" and "private placement" studies compare the prices of restricted stock issued by public companies with the prices of their traded shares.

All the approaches have their flaws. IPO studies, for example, are thought to have a bias toward overstating the discount because of the differences in timing of transactions. Restricted stock and private placement studies tend to understate the discount: Since they confine their attention to public companies, they do not account for factors other than the discount for lack of marketability (DLOM), and, moreover, the actual restrictions on marketability for private

placements have been loosened significantly over the years by the Securities and Exchange Commission.

On balance, however, the studies point to a substantial discount. For purposes of this testimony, I use a discount of 25%, which is somewhat below the average of the averages of the three groups in Exhibit RB-23 (when taking the midpoint of the ranges for the studies with ranges of estimates).

Q: How would this affect the estimated cost of equity for the industry?

A: Assuming a 25% private company discount and a 17.9% market share for non-public companies, I calculate adjusted estimates of the private cost of equity and the public cost of equity:

$$17.9\% * \left(\frac{COE}{(1 - 0.25)} \right) + (82.1\%) * (COE),$$

where COE is the estimated cost of equity for public companies. The adjusted estimates are as follows:

Cost of Capital, Adjusted for Non-Public Ownership					
Source	**Method**	**Cost of Equity**		**WACC**	
Kroll	CAPM	9.2%		8.3%	
Kroll	CAPM + Size Premium	9.6%		8.6%	
Kroll	Build-Up	10.3%		9.2%	
Kroll	Fama-French 5-factor	10.4%		9.3%	
Kroll	DCF (1-stage)	22.1%		18.6%	
Kroll	DCF (3-stage)	23.7%		19.9%	
Damodaran Online	Implied Premium	8.11%		7.45%	
		Low	**High**	**Low**	**High**
Zanjani	Risk Premium over T-Bill	11.90%	12.31%	10.64%	10.98%
Zanjani	Risk Premium over T-Note	9.37%	9.69%	8.53%	8.80%
Zanjani	Risk Premium over Aaa Bond	9.55%	9.83%	8.68%	8.92%
Zanjani	Risk Premium over Baa Bond	9.62%	9.84%	8.74%	8.92%

Q: How do these figures speak to the issue of whether or not the pro forma expected return on net worth is reasonable?

A: There are at least two schools of thought on this issue.

The first is that the "net worth" in the pro forma return exhibit should be interpreted as an equity investment akin to the equity considered in the cost of equity analysis. Thus, it should be entitled to a similar rate of return. Under this school of thought, the return on net worth

calculated in the previous section should be compared directly with the figures in the table above. If one does this, the projected returns are, in my opinion, clearly not excessive, even when including investment income on surplus in the calculation of the return. Even before making the adjustments to the investment return projections that I believe are appropriate for the North Carolina Mobile Homeowners market, the projected total return of 11.49% is within the span of estimates, which range from 8.11% to 23.7%. If one instead focuses on the statutory return by excluding investment income on surplus, the projected return of 7.09% falls below the range of estimates. When testing robustness by 1) adjusting the investment portfolio to the allocations matched to the North Carolina Mobile Homeowners market and 2) substituting current yields for embedded yields, the returns rise slightly, but the findings are unchanged.

A second school of thought is that, although the capital of the operating subsidiaries may be fully financed by equity, the holding companies are the source of that equity. Thus, one should "look through" the operating subsidiaries to the level of the holding companies to determine a cost of capital, which is important because the holding companies---unlike the insurance subsidiaries---typically hold significant debt in the capital structure. Holding companies that are typically classified as property-casualty companies have, in recent history and on average, had in the neighborhood of 20% debt. Thus, the cost of capital for the holding company is, under this school of thought, calculated as a weighted average of the cost of equity and the cost of debt, with the weights based on each component's share of the capital structure. The result is the WACC discussed above, which, as can be seen above, is typically lower than the cost of equity due to the lower cost of debt.

On the other hand, the market value of the capital of the holding company will be different from the book value of the capital invested in the insurance subsidiaries. Thus, a particular return on net worth at the level of the operating subsidiary will translate into a lower (higher) return on holding company capital if the market value of the holding company capital exceeds (is less than) the net worth of the insurance subsidiaries.

Stock market valuations at current levels put the market-to-net worth ratio of the public companies that own the major underwriters of Mobile Homeowners insurance in North Carolina, on average, well above one. However, even if one assumes that the market value of holding company capital is equal to the net worth of the operating subsidiaries, the table demonstrates that a total return on net worth of 11.49% is reasonable and not excessive; it falls comfortably within the span of estimates (7.45% to 19.9%). The statutory return on net worth of 7.09% falls below the span of estimates and thus is not excessive. Similar conclusions apply after adjusting projected returns to account for the investment portfolio of companies serving the North Carolina Mobile Homeowners market and the current level of investment yields.

In summary, the expected return on net worth calculated in Section II are, in my opinion, consistent with a reasonable and not excessive return on invested capital when viewed on a total return basis and is not excessive when viewed on a statutory return basis.

IV.   Conclusion

Q: Based on your knowledge and experience and on the studies and analyses you have performed, have you come to any conclusions regarding the underwriting profit factor selected by the Bureau and used in its indicated rate level calculations in this filing?

A: Yes. Based on my pro forma return analysis detailed in Exhibit RB-22, I found that the expected statutory return on net worth implied by the selected 6.5% underwriting profit factor was 7.09% (not including investment income on surplus). The expected total return on net worth was 11.49% (including investment income on surplus). When making adjustments that I regard as appropriate to account for the asset distribution relevant for this line of business and the yields currently in the marketplace, the expected statutory and total returns rose to 7.12% and 11.67% respectively. After reviewing the cost of capital estimates for the industry produced by third parties and producing my own estimates tailored to the North Carolina market, I found the expected total return on net worth resulting from the selected underwriting profit factor to be consistent with a reasonable and not excessive return on invested capital. The expected statutory return on net worth is consistent with a return on invested capital that is not excessive.

An important caveat to this analysis, however, is that all conclusions are predicated on the assumption that the indicated rate level is achieved. In the event that a lower rate level is implemented, the expected rate of return could be inadequate.

Q: Does that conclude your testimony?

A: Yes.

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"An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," (with Daniel Bauer), working paper, 2023

"Optimal Insurance Contracts with Insurer Background Risk," (with Xiaohu Ping), working paper, 2015

"The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," (with Shinichi Kamiya and Jackie Li), working paper, 2015

"Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry" working paper, 2010

"The Rise and Fall of the Fraternal Life Insurer: Law and Organizational Form in U.S. Life Insurance, 1870-1920," working paper, (*revise and resubmit, Journal of Law & Economics),* 2007

"Organizational Form and the Underwriting Cycle: Theory with Evidence from the Pennsylvania Fire Insurance Market, 1873-1909," working paper, 2004

"Consumption versus Production of Insurance," (with Tomas Philipson), *NBER Working Paper #6225,* 1997

External Research Projects and Consulting

2024	Expert Witness, Workers' Compensation Rate Filings, Massachusetts
2023	Using Industry Level Experience to Improve Company Loss Reserving, sponsored by CAS
2023	Expert Witness, Insurance Rate Filings, North Carolina
2023	Expert Witness, Workers' Compensation Rate Filings, Massachusetts
2022	Expert Witness, Insurance Rate Filings, North Carolina
2022	Expert Witness, Workers' Compensation Rate Filings, Massachusetts
2021	Expert Witness, Golson v. Provident Life, Alabama
2021	Expert Witness, Insurance Rate Filings, North Carolina

2020   Expert Witness, Insurance Rate Filings, North Carolina
2020   Expert Witness, Workers' Compensation Rate Filings, Massachusetts
2019   NCCI Review of Cost of Capital Methodology
2019   Expert Witness, Insurance Rate Filings, North Carolina
2018   NCCI Review of TCJA
2017   Expert Witness, Workers' Compensation Rate Hearing, Florida
2016   Expert Witness, Assigned Risk Workers' Compensation Rate Hearing, Virginia
2015   Expert Witness, Workers' Compensation Rate Hearing, Florida
2015   NCCI Revision of Underwriting Profit and Contingency Internal Rate of Return Model
2015   An Extension of the Project on the Costs of Holding Capital, sponsored by the CAS
2013   Microinsurance Centre Lessons from History Project
2012   Allocation of the Costs of Holding Capital, sponsored by the CAS,
2011   CRO Risk Index Project, co-sponsored by SOA and Bloomberg, co-founder
2009   "The Financial Crisis and Lessons for Insurers," $50,000 SOA grant, role: report co-author

Papers Presented at Professional Meetings

2023   "Life Insurance and Annuity Pricing During the Financial Crisis, Revisited" EGRIE Annual Seminar, Malaga, Spain
2023   "Life Insurance and Annuity Pricing During the Financial Crisis, Revisited" IME Annual Conference, Edinburgh, UK
2023   "Understanding Loss Reserving Errors in the Liability Catastrophe of 1997-2001," IME Annual Conference, Edinburgh, UK
2023   "Understanding Loss Reserving Errors in the Liability Catastrophe of 1997-2001," Gen Re Seminar, Cologne, Germany
2022   "Understanding Loss Reserving Errors in the Liability Catastrophe of 1997-2001," Conference in Honor of J.David Cummins and Mary Weiss, Temple University**,** Philadelphia
2020   "Life Insurance and Annuity Pricing During the Financial Crisis, Revisited" WRIEC, virtual meeting
2019   "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," EGRIE Annual Meeting, Rome, Italy
2019   "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," ARIA Annual Meeting, San Francisco, CA
2019   "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," RTS Annual Seminar, Tuscaloosa, AL
2017   "The Effect of Government Guarantees on Market Discipline in the Property-Casualty Insurance Industry," NBER Insurance Project Workshop, Boston, MA
2015   "The Marginal Cost of Risk in a Multi-Period Model," NBER Insurance Project Workshop, Stanford, CA
2015   "The Marginal Cost of Risk in a Multi-Period Model," CAS Annual Meeting, Philadelphia, PA
2015   "Dynamic Capital Allocation," IME Annual Conference, Liverpool UK
2015   "What Drives Tort Reform Legislation? Economics and Politics of the State Decisions to Restrict Liability Torts," ASSA Annual Meeting, Boston, MA
2014   "The Marginal Cost of Risk in a Multi-Period Model," CAS Centennial, New York, NY
2014   "Market Discipline and Guaranty Funds in Life Insurance," EGRIE Annual Seminar, St. Gallen, CH
2014   "Dynamic Capital Allocation with Irreversible Investments," EGRIE Annual Seminar, St. Gallen, CH
2014   "What Drives Tort Reform Legislation? Economics and Politics of the State Decisions to Restrict Liability Torts," ARIA Annual Meeting, Seattle, WA
2014   "The Marginal Cost of Risk in a Multi-Period Model," ARIA Annual Meeting, Seattle, WA
2014   "Market Discipline and Guaranty Funds in Life Insurance," ARIA Annual Meeting, Seattle, WA
2014   "The Marginal Cost of Risk in a Multi-Period Model," IME Conference, Shanghai, CN
2014   "The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," Risk Theory Seminar, Munich, Germany
2013   "The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," ASSA Annual Meeting, Philadelphia, PA

2013   "Optimal Insurance Contracts with Insurer Background Risk," EGRIE Annual Meeting, Paris, FR

2013   "The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," ARIA Annual Meeting, Washington D.C.

2013   "The Marginal Cost of Risk, Risk Measures, and Capital Allocation," IRFRC Catastrophe Risk Conference, Singapore

2013   "Optimal Insurance Contracts with Insurer Background Risk," ARIA Annual Meeting, Washington D.C.

2013   "The Marginal Cost of Risk, Risk Measures, and Capital Allocation," CEAR/ETH Indices of Risk and New Risk Measures Conference, Zurich, CH

2012   "The Marginal Cost of Risk, Risk Measures, and Capital Allocation," CAS Spring Meeting, Phoenix, AZ

2012   "The Marginal Cost of Risk, Risk Measures, and Capital Allocation," Symposium: Risk and Catastrophic Events, State College, PA

2012   "The Marginal Cost of Risk, Risk Measures, and Capital Allocation," ASSA Annual Meeting, Chicago, IL

2011   "The Marginal Cost of Risk, Risk Measures, and Capital Allocation," NBER Insurance Project Workshop, Cambridge, MA

2010   "Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry," ASSA Annual Meeting, Atlanta, GA

2009   "Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry," Risk Management and Corporate Governance Conference, Loyola University of Chicago

2009   "Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry," ARIA Annual Meeting, Providence, RI

2008   "An Economic Approach to Capital Allocation," Risk Theory Society, Annual Meeting, Fort Collins, CO

2007   "Federal Financial Exposure to Catastrophic Risk," ARIA Annual Meeting, Quebec City, CA

2007   "Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer," EFMA Annual Meeting, Vienna, AT

2007   "Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer," 5th Infiniti Conference on International Financial Integration, Dublin, IE

2007   "Federal Financial Exposure to Catastrophic Risk," NBER Conference on Measuring and Managing Federal Financial Risk, Evanston, IL

2006   Insuring Catastrophic Losses: The Status of TRIA and Proposed Natural Disaster Backstops, Wash., D.C.

2006   "Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer," Risk Theory Society, Annual Meeting, Richmond,VA

2006   "Public versus Private Underwriting of Catastrophe Risk: Lessons from the California Earthquake Authority," Berkeley Symposium on Real Estate, Catastrophic Risk, and Public Policy

2006   "Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer," NBER Insurance Project Workshop, Cambridge, MA

2005   "Regulation, Capital, and the Evolution of Organizational Form in U.S. Life Insurance," NBER Insurance Project Workshop, Cambridge, MA

2004   "The Rise and Fall of the Fraternal Life Insurer: Law and Organizational Form in U.S. Life Insurance," NBER Insurance Project Workshop, Cambridge, MA

2004   "Regulation, Capital, and the Evolution of Organizational Form in U.S. Life Insurance," American Finance Association, Annual Meeting, San Diego, CA

2003   "Insurance, Self-Protection, and the Economics of Terrorism," Risk Theory Society, Annual Meeting, Atlanta, GA

2003   "Terrorism Insurance Policy and the Public Good," St. John's Journal of Legal Commentary 10th Annual Legal Symposium: Terrorism and its Impact on Insurance: Legislative Responses and Coverage Issues, Queens, NY

2003   "Insurance, Self-Protection, and the Economics of Terrorism," NBER Insurance Project Workshop, Cambridge, MA

2002   "Pricing and Capital Allocation in Catastrophe Insurance," CAS Risk and Capital Management Seminar, Toronto, CA

2002   "Market Discipline and Government Guarantees in U.S. Life Insurance," Risk Theory Society, Annual Meeting, Urbana-Champaign, IL

2001   "Pricing and Capital Allocation in Catastrophe Insurance," Risk Theory Society, Annual Meeting, Montreal

Other Conferences Talks and Panel Participation

2018	Surplus Lines Automation Conference, Florida
2017	International Conference on Business Sciences, Cairo University, Egypt
2016	IIF Insurance Colloquium, Basel, Switzerland
2016	Surplus Lines Association of California, California (keynote)
2014	Surplus Lines Automation Conference, Florida
2011	PRMIA Annual Risk Leadership Conference, Atlanta, GA
2011	7th International Microinsurance Conference, Rio de Janeiro, Brazil
2010	Property Loss Research Bureau Eastern Adjusters Conference, Atlanta, GA (keynote)
2008	NCOIL Annual Meeting, Duck Key, FL
2007	Capital Markets Symposium on Securitizing Insurance Risk, New York, NY
2006	Insuring Catastrophic Losses: The Status of TRIA and Proposed Natural Disaster Backstops, Wash., D.C.
2006	Catastrophe Bonds and Insurance Linked Securities Summit, New York, NY
2005	12th Annual International Conference Promoting Business Ethics, New York, NY

Service Activities in Academic and Professional Organizations

Senior Editor, *Journal of Risk and Insurance* (2019-)
Associate Editor, *Insurance: Mathematics and Economics* (2022-)
International Research Advisory Board, Risk and Insurance Research Center, NCCU, Taiwan
American Risk & Insurance Association President (2012-13)
Risk Theory Society President (2011-2012)
American Risk & Insurance Association Board Member (2007-2014)
Editorial Board, *Journal of Insurance Issues* (2012-2014)
Huebner Colloquium Panelist (2016-2019)

External Committees
> *American Risk & Insurance Association Program Committee, various years; ARIA Nominations Committee, 2015, 2016, 2018; Kulp-Wright Book Award Committee, 2005; ARIA Mehr Award Committee, 2024*

Discussant: *EGRIE Annual Seminar, Malaga, 2023; ARIA Annual Meeting, Los Angeles, 2022; WRIEC 2020; EGRIE Annual Meeting, Rome, 2019; ARIA Annual Meeting, San Francisco, 2019; ARIA Annual Meeting, Chicago, 2018; ARIA Annual Meeting, Boston, 2016; SIFR Insurance Conference, Stockholm, 2015; EGRIE Annual Seminar, St. Gallen, 2014; ARIA Annual Meeting, Seattle, 2014; ARIA Annual Meeting, San Diego, 2011; CEAR Workshop on Insurance for the Poor, Atlanta, 2010; CEAR Workshop on Risk Perception and Subjective Beliefs, Atlanta, 2010; Midwest Finance Association Annual Meeting, Chicago, 2009; 5th Infiniti Conference, Dublin, 2007; EFMA Annual Meeting, Vienna, 2007; AEA Annual Meeting, San Diego, 2004*

Session Chair: *ARIA Annual Meeting, Chicago, 2018, ARC, Atlanta, 2017; IME, Atlanta, 2017; ARIA Annual Meeting, San Diego, 2011; Midwest Finance Association Annual Meeting, Chicago, 2009; ARIA Annual Meeting, Quebec City, 2007; EFMA Annual Meeting, Vienna, 2007;*

Referee for *Asia-Pacific Journal of Risk and Insurance, Astin Bulletin, Australian Social Monitor, Contemporary Economic Policy, Current Issues in Economics and Finance, Defense and Peace Economics, European Economic Review, Financial Review, Geneva Papers: Issues and Practice, Geneva Risk and Insurance Review, Health Affairs, Insurance: Mathematics and Economics, Journal of Banking and Finance, Journal of Business, Journal of Finance, Journal of Financial Intermediation,*

Journal of Financial Services Research, Journal of Law and Economics, Journal of Mathematical Economics, Journal of Money, Credit, and Banking, Journal of Political Economy, Journal of Risk and Insurance, Management Science, Mathematical Social Sciences, North American Actuarial Journal, Proceedings of the National Academy of Sciences, Review of Financial Studies, Risk Management and Insurance Review, Scandinavian Actuarial Journal, and *Science.*

Working Group Participation

Committee on the Global Financial System, Working Group on Institutional Investors, Global Savings, and Asset Allocation (2006); *Presidential Working Group on Financial Markets, Working Group on Terrorism Insurance* (2006)

Continuing Education Activities

2004-2007   Central Banking Seminar, Federal Reserve Bank of New York, Topics: Introduction to U.S. Financial Markets; Introduction to Non-bank Financial Institutions

2009   Texas Farm Bureau Program, Georgia State University, Topic: Securitization, the Insurance Industry, and the Panic of 2007

2009-2012   Horst K. Jannott Visiting Fellows Program, Georgia State University, Topics: Securitization, the Insurance Industry, and the Panic of 2007; Introduction to Statistics

	Pre-Tax	Tax Liability	Post-Tax
NCRB - Pro Forma Statutory Rate of Return			
MOBILE HOMEOWNERS MH(F) INSURANCE			
1 Premiums	100.00%		
Loss & LAE	34.87%		
Commissions	17.80%		
Other Acquisition & General	6.42%		
Taxes, Licenses, & Fees	2.90%		
Policyholder Dividends	0.50%		
Net Cost of Reinsurance	30.28%		
Compensation for Assessment Risk	0.72%		
2 Pro Forma Underwriting Profit	6.50%		
3 Installment Fee Income	0.18%		
4 Regular Tax		1.40%	
5 Additional Tax Due to IRS Treatment of Reserves		0.01%	
6 Total Return from Underwriting Post-Tax			5.27%
7 Investment Gain on Insurance Transaction	1.50%		
Less Investment Income on Agent and Reinsurance Balances	0.59%		
Net Investment Gain on Insurance Transaction	0.91%	0.16%	0.76%
8 Total Return as a Percent of Premium (post-tax)			6.02%
9 Premium-to-Net Worth Ratio			1.18
10 Total Return as a Percent of Net Worth (post-tax)			7.09%

Lines (1) to (8) are expressed as a percentage of premium.

Assumptions and Parameters

(a)	Underwriting Income Tax Rate	21.00%
(b)	Investment Income Tax Rate	17.21%
(c)	Pre-tax Investment Yield	5.13%
(d)	Premium-to-Surplus Ratio	1.32
(e)	Net Worth-to-Surplus Ratio	1.122
(f)	Installment Fee Income	0.18%
(g)	Additional Tax Due to IRS Treatment of Loss Reserves and UEPR	0.01%
(h)	Net Cost of Reinsurance	30.28%
(i)	Compensation for Assessment Risk	0.72%

Notes to Exhibit RB-22 Page 1

1 The expense provisions are those used in Exhibit RB-1, adjusted for the indicated rate change.

2 Selected by North Carolina Rate Bureau

3 See Exhibit RB-22, Page 3

4 [(2) + (3)] x (a)

5 See Exhibit RB-22, Pages 4-6

6 (2) + (3) - (4) - (5)

7 Investment income on agents balances is calculated as 0.1517 x 1.021 x (c) , where 0.1517 is a factor for agents balances held for less than 90 days and 1.021 is a factor to correct for overdue balances.   The figures are based on the Homeowners line and are sourced from ISO. We then deduct investment income on net reinsurance balances, which we estimate at 0.105 of the total cost of reinsurance times (c). The estimate for net reinsurance balances is based on ceded balances payable plus funds held plus other amounts due reinsurers minus reinsurance recoverables. These amounts are taken from the aggregated Schedule F in the latest available edition of A.M. Best's Aggregates & Averages.

8 (6) + (7)

9 (d) / (e)

10 (8) x (9)

Assumptions

(a) Current corporate tax rate, based on the Tax Cut and Jobs Act of 2017.
(b) See Exhibit RB-22 , Pages 11-13. Calculated as 1- average post-tax yield/average pre-tax yield.
(c) See Exhibit RB-22, Page 10
(d) See Exhibit RB-22, Page 14
(e) See Exhibit RB-22, Page 15
(f) See Exhibit RB-22, Page 3
(g) See Exhibit RB-22, Pages 4-6
(h) Net Cost of Reinsurance based on the analysis of Aon and incorporated in the filing, adjusted for the indicated rate change.
(i) Compensation for Assessment Risk based on the analysis of Milliman incorporated in the filing, adjusted for the indicated rate change.

NCRB - Pro Forma Total Rate of Return
(Including Investment Income on Surplus)
MOBILE HOMEOWNERS MH(F) INSURANCE

	Pre-Tax	Tax Liability	Post-Tax
1 Premiums	100.00%		
Loss & LAE	34.87%		
Commissions	17.80%		
Other Acquisition & General	6.42%		
Taxes, Licenses, & Fees	2.90%		
Policyholder Dividends	0.50%		
Net Cost of Reinsurance	30.28%		
Compensation for Assessment Risk	0.72%		
2 Pro Forma Underwriting Profit	6.50%		
3 Installment Fee Income	0.18%		
4 Regular Tax		1.40%	
5 Additional Tax Due to IRS Treatment of Reserves		0.01%	
6 Total Return from Underwriting Post-Tax			5.27%
7 Investment Gain on Insurance Transaction	1.50%		
Less Investment Income on Agent and Reinsurance Balances	0.59%		
Net Investment Gain on Insurance Transaction	0.91%	0.16%	0.76%
8 Investment Gain on Surplus	4.52%	0.78%	3.74%
9 Total Return as a Percent of Premium (post-tax)			9.76%
10 Premium-to-Net Worth Ratio			1.18
11 Total Return as a Percent of Net Worth (post-tax)			11.49%

Lines (1) to (8) are expressed as a percentage of premium.

Assumptions and Parameters

(a) Underwriting Income Tax Rate	21.00%
(b) Investment Income Tax Rate	17.21%
(c) Pre-tax Investment Yield	5.13%
(d) Premium-to-Surplus Ratio	1.32
(e) Net Worth-to-Surplus Ratio	1.122
(f) Installment Fee Income	0.18%
(g) Additional Tax Due to IRS Treatment of Loss Reserves and UEPR	0.01%
(h) Net Cost of Reinsurance	30.28%
(i) Compensation for Assessment Risk	0.72%

Notes to Exhibit RB-22 Page 1A

1 The expense provisions are those used in Exhibit RB-1, adjusted for the indicated rate change.

2 Selected by North Carolina Rate Bureau

3 See Exhibit RB-22, Page 3

4 [(2) + (3)] x (a)

5 See Exhibit RB-22, Pages 4-6

6 (2) + (3) - (4) - (5)

7 Investment income on agents balances is calculated as 0.1517 x 1.021 x (c) , where 0.1517 is a factor for agents balances held for less than 90 days and 1.021 is a factor to correct for overdue balances.   The figures are based on the Homeowners line and are sourced from ISO. We then deduct investment income on net reinsurance balances, which we estimate at 0.105 of the total cost of reinsurance times (c). The estimate for net reinsurance balances is based on ceded balances payable plus funds held plus other amounts due reinsurers minus reinsurance recoverables. These amounts are taken from the aggregated Schedule F in the latest available edition of A.M. Best's Aggregates & Averages.

8 (c) x [1/ (d) + 0.2343 x 0.5242], where 0.2343 is the prepaid expense ratio minus the total cost of reinsurance from Page 7 and 0.5242 is the UEPR ratio from Page 7.

9 (6) + (7) + (8)

10 (d) / (e)

11 (9) x (10)

Assumptions

(a) Current corporate tax rate, based on the Tax Cut and Jobs Act of 2017.
(b) See Exhibit RB-22 , Pages 11-13. Calculated as 1- average post-tax yield/average pre-tax yield.
(c) See Exhibit RB-22, Page 10
(d) See Exhibit RB-22, Page 14
(e) See Exhibit RB-22, Page 15
(f) See Exhibit RB-22, Page 3
(g) See Exhibit RB-22, Pages 4-6
(h) Net Cost of Reinsurance based on the analysis of Aon and incorporated in the filing, adjusted for the indicated rate change.
(i) Compensation for Assessment Risk based on the analysis of Milliman incorporated in the filing, adjusted for the indicated rate change.

NORTH CAROLINA
MOBILE HOMEOWNERS MH(F) INSURANCE
INSTALLMENT PAYMENT INCOME

Year	Installment Charges	Mobile Home Written Premium	Percentage
2022	186,274	140,113,105	0.13%
2021	98,292	130,201,079	0.08%
2020	194,677	122,868,273	0.16%
2019	317,709	118,284,427	0.27%
2018	327,136	117,915,910	0.28%
Selected Value			0.18%

Source: NCRB

North Carolina
MOBILE HOMEOWNERS MH(F) INSURANCE
Calculation of Additional Tax Liability

1. Collected Earned Premium for Current Year	100.00%
2. Unearned (Net) Premium Reserve 12/31/Current	34.47%
3. Unearned (Net) Premium Reserve 12/31/Prior	34.12%
4. Increase: (2) - (3)	0.35%
5. 20% of Increase = Taxable Income	0.07%
6. Additional Tax Liability due to Unearned Premium Reserve	0.01%
7. Unpaid Loss Current Year	8.38%
8. Discounted Unpaid Loss Prior Year	7.98%
9. Unpaid Loss Prior Year	8.29%
10. Discounted Unpaid Loss Prior Year	7.88%
11. Additional Income	-0.02%
12. Additional Tax Liability due to Loss Reserve Discounting	0.00%
13. Total Additional Tax Liabilities (6) + (12)	0.01%

NORTH CAROLINA
MOBILE HOMEOWNERS MH(F) INSURANCE
Calculation of Taxable Income

Calculation of Unpaid Loss for Current Accident Year (AY)					Calculation of Discounted Unpaid Loss for Current AY			Calculation of Discounted Unpaid Loss for Prior AY			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
AY Avg Acc Date	AY Pay Pattern	Percent Unpaid	Total Losses	Unpaid Losses	AY at 12/31 yr t	Discount Factor	Discounted Unpaid Loss	AY at 12/31/yr t-1	Unpaid Losses	Discount Factor	Discounted Unpaid Loss
0.5	76.64%	23.36%	34.872	8.15	2022	0.957799	7.8034				
1.5	94.54%	5.46%	34.519	1.88	2021	0.938725	1.7687	2021	8.065	0.954554	7.6983
2.5	98.72%	1.28%	34.170	0.44	2020	0.937004	0.4083	2020	1.865	0.933939	1.7419
3.5	99.70%	0.30%	33.825	0.10	2019	0.928864	0.0936	2019	0.431	0.936815	0.4041
4.5	99.93%	0.07%	33.482	0.02	2018	0.914064	0.0213	2018	0.100	0.932041	0.0930
5.5	99.98%	0.02%	33.144	0.01	2017	0.916039	0.0049	2017	0.023	0.914064	0.0211
6.5	100.00%	0.00%	32.808	0.00	2016	0.913154	0.0011	2016	0.005	0.916039	0.0049
7.5	100.00%	0.00%	32.476	0.00	2015	0.910177	0.0000	2015	0.001	0.913154	0.0011
								2014	0.000	0.910177	0.0000
Totals				10.60			10.10		10.49		9.96

Notes to Pages 4 and 5

Page 4

2	Page 8, line (2) divided by Page 8, line (1) times one minus the Cost of Reinsurance from Page 7
3	(2) divided by 1 plus the 10 year average growth rate of MHF premiums in North Carolina
4	(2) - (3)
5	(4) x 20%
6	(5) x current corporate tax rate
7	Unpaid current-year net losses at year-end as a percent of current year premium.
	Sum of Page 5, Column (5) x (ratio of the net loss and LAE ratio from Page 7 to the direct loss and LAE ratio from Page 1)
8	Discounted unpaid current-year losses at year-end as a percent of current year premium.
	Sum of Page 5, Column (8) x (ratio of the net loss and LAE ratio from Page 7 to the direct loss and LAE ratio from Page 1)
9	Unpaid prior-year losses at year-end as a percent of current year premium.
	Sum of Page 5, Column (10) x (ratio of the net loss and LAE ratio from Page 7 to the direct loss and LAE ratio from Page 1)
10	Discounted unpaid prior-year losses at year-end as a percent of current year premium.
	Sum of Page 5, Column (12) x (ratio of the net loss and LAE ratio from Page 7 to the direct loss and LAE ratio from Page 1)
11	Change in loss reserve discount: [(7) - (8)] - [(9) - (10)]
12	(11) x current corporate tax rate
13	(6) + (12)

Page 5

1	Midpoint of number of years since end of accident period
2	Homeowners accident year payout pattern developed from North Carolina policy year losses (Source: ISO)
3	1 - (2)
4	Latest period losses are based on projected loss ratio from Page 1. For previous years,
	losses are detrended at the 10 year average premium growth rate for MHF in North Carolina.
5	(3) x (4)
6	Accident Year at current year end
7	IRS discount factors for Multiple Peril Lines from Revenue Procedure 2023-10
8	(5) x (7)
9	Accident Year at prior year end
10	Column (3), previous period x Column (4), current period
11	IRS discount factors for Multiple Peril Lines from Revenue Procedure 2021-54
12	(10) x (11)

NCRB Investment Income Calculation
MOBILE HOMEOWNERS MH(F) INSURANCE

Projected Investment Earnings on Loss, Loss
Adjustment Expense and Unearned Premium Reserves

A. UNEARNED PREMIUM RESERVES

1. Direct Earned Premiums		1,000,000
2. Mean Unearned Premium Reserve	52.42%	524,173
3. Deductions for Prepaid Expenses		
Commissions & Brokerage	17.80%	
Taxes, Licenses, & Fees (5/6)	2.42%	
Other Acquisition & General (1/2)	3.21%	
Cost of Reinsurance	37.59%	
Total	61.02%	
4. Deduction for Prepaid Expense: (2) x (3)		319,841
5. Net Unearned Premium Reserve Subject to Investment (2) - (4)		204,332

B. Loss and Loss Expense Reserves

1. Direct Earned Premiums		1,000,000
2. Expected Net Incurred Loss & LAE-to- Direct Premium Ratio	27.56%	275,645
3. Expected Mean Loss and LAE Reserve-to-Incurred Ratio	32.27%	88,937

C. Net Policyholder Funds Subject to Investment (A5 + B3)   293,269

D. Average Rate of Return   5.13%

E. Investment Earnings from Net Reserves: (C) x (D)   15,050

F. Average Rate of Return as a Percent of Direct Earned Premiums: (E) / (A1)   1.50%

NORTH CAROLINA
MOBILE HOMEOWNERS MH(F) INSURANCE

ESTIMATED INVESTMENT EARNINGS ON UNEARNED
PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

Line A-1
Calculations displayed are per million of direct earned premiums.

Line A-2
The mean unearned premium reserve (UEPR) is determined by multiplying the direct earned premiums
in line (1) by the ratio of the mean unearned premium reserve to the direct earned premium
for the most recent available calendar year. The data are for North Carolina Homeowners (NC HO) insurance
(from statutory Page 14 of the Annual Statement) for all companies which wrote Mobile Homeowners F
in the most recent calendar year. Volume amounts are in thousands of dollars.

1	NC HO Direct Earned Premium for most recent calendar year	1,216,109
2	NC HO UEPR at end of most recent calendar year	671,678
3	NC HO UEPR at end of previous calendar year	603,225
4	Mean NC HO UEPR	637,452
5	Ratio [(4) / (1)]	52.42%

Line A-3
Deduction for prepaid expenses
Certain production expenses, such as commissions and reinsurance, are assumed to be incurred when the
policy is written and before the premiuim is paid. In addition, half of Other Acquisition and General
expenses and 5/6 of Taxes, Licenses and Fees are assumed to be prepaid.

NORTH CAROLINA
MOBILE HOMEOWNERS MH(F) INSURANCE

ESTIMATED INVESTMENT EARNINGS ON UNEARNED
PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

Line B-2
Ratio is calculated as the expected direct loss and LAE ratio from Page 1 minus the difference between
the total cost of reinsurance from Line A-3 and the net cost of reinsurance from Page 1.

Line B-3
The mean loss reserve is calculated by multiplying the incurred losses in (2) by the ratio for mean
loss reserves to incurred losses. The latter figures are based on total statutory Page 14 figures
for North Carolina Homeowners direct losses incurred and direct losses unpaid for all companies
writing Mobile Homeowners F in North Carolina in each year. The adjustment for loss expense reserves
is based on nationwide industry aggregates for the HO line. Volume amounts are in thousands of dollars.

6	Direct Losses Incurred	2018	878,952
7	Direct Losses Incurred	2019	576,563
8	Direct Losses Incurred	2020	720,974
9	Direct Losses Incurred	2021	574,252
10	Direct Losses Incurred	2022	894,159
11	Direct Losses Unpaid	2017	152,655
12	Direct Losses Unpaid	2018	251,499
13	Direct Losses Unpaid	2019	186,352
14	Direct Losses Unpaid	2020	220,506
15	Direct Losses Unpaid	2021	196,446
16	Direct Losses Unpaid	2022	323,041
17	Mean Loss Reserve	2018	202,077
18	Mean Loss Reserve	2019	218,925
19	Mean Loss Reserve	2020	203,429
20	Mean Loss Reserve	2021	208,476
21	Mean Loss Reserve	2022	259,743
22	Ratio	2018	22.99%
23	Ratio	2019	37.97%
24	Ratio	2020	28.22%
25	Ratio	2021	36.30%
26	Ratio	2022	29.05%
27	Average Loss Reserve		30.91%
28	Ratio of LAE Reserves to Loss Reserves		0.187
29	Ratio of Incurred LAE to Incurred Loss		0.137
30	Loss & LAE Reserve [(27) x (1+(28))/(1+(29))]		0.323

NORTH CAROLINA
MOBILE HOMEOWNERS MH(F) INSURANCE

ESTIMATED INVESTMENT EARNINGS ON UNEARNED
PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

<u>Line E</u>
The average rate of return is the average of the pretax current yield calculated on Page 11 and the pretax embedded yield. The embedded yield (see Page 12) is the sum of the ratio of investment income to invested assets for the most recent year plus the ten year average ratio of capital gains to invested assets (see Page 13). The current yield is the estimated currently available rate of return (including both income and capital gains) on the industry investment portfolio (see Page 11).

Embedded Yield	3.86%
Current Yield	6.40%
Average	5.13%

Investable Asset	Percent of Assets	Estimated Prospective Pre-Tax Return	Tax Rate	Estimated Prospective Post-Tax Return
Bonds				
US Gov't	9.73%	4.50%	21.00%	3.56%
Municipal	21.05%	3.07%	5.25%	2.91%
Industrial	34.16%	5.66%	21.00%	4.47%
Preferred Stock	0.46%	7.01%	13.13%	6.09%
Common Stock	18.38%	13.66%	19.55%	10.99%
Mortgage Loans	1.32%	7.30%	21.00%	5.77%
Real Estate	0.76%	6.61%	21.00%	5.22%
Cash & Short-term Investments	5.43%	5.49%	21.00%	4.34%
Other Long-Term Investments	8.71%	7.85%	18.69%	6.38%
Rate of Return Before Expenses	100.00%	6.69%	18.66%	5.44%
Investment Expenses		0.29%	21.00%	0.23%
Portfolio Rate of Return		6.40%	18.55%	5.22%

Title: **Portfolio Yield and Tax Rate - Current Yield**

Sources

Preferred Stock	Current yield on iShares Preferred Stock Index ETF, 1/3/2024
Real Estate	REIT Sector WACC; source: Damodaran Online, using 4.253% for 10-year Treasury yield
Cash	3 month Treasury rate, averaged over 3 months (source: US Treasury)
Municipal	Maturity weighted avg of 3 month avg MBIS Investment Grade yield curve; linearly interpolated
Industrial	Three month average of HQM par yields (source: FRED); linearly interpolated
Treasury	Three month average of Treasury yields; linearly interpolated (source: US Treasury)
Common Stock	0.0817 ERP (source: Damodaran Online) plus 3 month average T-Bill Rate
Other LTI	Average of yields on bond portfolio, preferred stock, common stock, mortgages, and real estate.
Investment Expenses	Investment Expenses from statutory Page 12 of the Annual Statement (Exhibit of Net Investment Income) divided by Cash and Invested Assets from statutory Page 2 of the Annual Statement (Assets), as compiled in the 2023 edition of A.M. Best's Aggregates and Averages.

Portfolio Yield and Tax Rate Embedded Yield		
	Income	**Tax Rate**
Bonds		
Taxable	31,319,900	21.00%
Non-Taxable	6,002,714	5.25%
Stocks		
Taxable	10,532,139	13.13%
Non-Taxable	3,239,275	5.25%
Mortgage Loans	1,409,375	21.00%
Real Estate	1,933,499	21.00%
Contract Loans	202	21.00%
Cash & Short Term Inv	1,967,412	21.00%
All Other	22,850,110	21.00%
Total	79,254,626	18.12%
Inv. Expenses	6,410,961	21.00%
Net Inv. Income	72,843,665	17.87%
Mean Invested Assets	2,251,339,204	
Inv. Inc. Yield Rate	3.24%	17.87%
Capital Gains (10 yr. avg.) (% of Inv. Assets)	0.62%	0.00%
Invest. Yield Rate (pre-tax)	3.86%	14.98%
Invest. Yield Rate (post-tax)	3.28%	

Source: A.M. Best's Aggregates and Averages, 2023 Edition, Page 12 - Exhibit of Net Investment Income (Column 2 - Earned During Year). For capital gains, see Exhibit RB-22, Page 13.

Realized Capital Gains or Losses
As a Percentage of Mean Invested Assets
(Amounts in Thousands of Dollars)

Calendar Year	Mean Invested Assets	Realized Capital Gains Amount	Percent
2013	1,473,600,834	12,163,890	0.83%
2014	1,543,882,375	12,093,078	0.78%
2015	1,567,611,077	9,887,732	0.63%
2016	1,596,937,470	8,086,268	0.51%
2017	1,676,831,258	15,725,303	0.94%
2018	1,733,729,297	10,825,733	0.62%
2019	1,822,857,949	11,238,484	0.62%
2020	1,975,605,647	10,933,304	0.55%
2021	2,156,355,790	18,153,320	0.84%
2022	2,251,339,204	2,090,986	0.09%
Total	17,798,750,898	111,198,098	0.62%

"Mean Invested Assets" is the average of current and prior year values for
Total Invested Assets (Page 2). Source for data is 2013-2023 editions of
A.M. Best's Aggregates and Averages. Figures are net of capital gains taxes.

North Carolina

MOBILE HOMEOWNERS MH(F) INSURANCE

Premium-to-Surplus Ratios

Year	Ratio
2022	1.52
2021	1.34
2020	1.27
2019	1.36
2018	1.45
2017	1.38
2016	1.25
2015	1.23
2014	1.24
2013	1.20
Average	1.32

Data from NAIC Statutory Filings and from A.M. Best's
Aggregates and Averages, various years, for all groups writing
Mobile Homeowners insurance in North Carolina, weighted by
North Carolina Mobile Homeowners premiums.

North Carolina
MOBILE HOMEOWNERS MH(F) INSURANCE
Calculation of Ratio of GAAP Net Worth to Statutory Surplus

	2018	2019	2020	2021	2022
Policyholder Surplus	742,079,084,495	847,278,658,173	910,066,482,410	1,028,834,642,825	958,964,082,808
+ Deferred Acquisition Costs	43,991,738,565	46,002,606,289	48,118,482,109	51,883,319,641	54,714,320,843
+ Non-Admitted DTA Provision	6,314,927,861	6,045,409,090	6,001,020,602	5,674,496,962	6,641,006,360
+ Non-admitted Assets (non-tax part)	46,502,063,197	50,520,441,190	51,971,123,366	62,815,925,708	54,765,183,036
+ Provision for Reinsurance	2,737,598,756	2,944,031,835	3,290,710,172	3,665,749,561	2,962,166,230
+ Provision for FASB 115(after-tax)	912,505,274	32,483,869,271	57,249,505,836	30,528,918,187	(69,664,596,475)
- Surplus Notes	(11,660,367,237)	(11,606,263,627)	(13,225,869,920)	(13,699,558,971)	(15,548,449,729)
GAAP-adjusted Net Worth	830,877,550,911	973,668,752,221	1,063,471,454,574	1,169,703,493,912	992,833,713,073
Ratio of Net Worth to Surplus	1.12	1.15	1.17	1.14	1.04
Five Year Average	1.122				

Source: ISO

Sample of Findings on the Private Company Discount

Study	Years	Discount	Type
Emory (1994)	1992-1993	45%	IPO
Willamette Management Associates (various)	1975-1997	29% to 60%	IPO
Garland and Reilly (2004)	1998-2002	35%	IPO
Larcker et al. (2018)	2017	39% to 47%	IPO
Koeplin et al. (2000)	1984-1998	20% to 30%	Acquisitions
Block (2007)	1999-2006	20% to 25%	Acquisitions
Officer (2007)	1979-2003	15% to 30%	Acquisitions
Paglia and Harjoto (2010)	1993-2008	65% to 70%	Acquisitions
Jaffe et al. (2018)	1985-2014	0%	Acquisitions
Lohrey (2020)	2005-2015	48% to 62%	Acquisitions
Goetz (2021)	1997-2014	13%	Acquisitions
Silber (1991)	1981-1988	34%	Restricted Stock
Johnson (1999)	1991-1995	20%	Restricted Stock
Bajaj et al. (2001)	1990-1995	7%	Private placements
Comment (2012)	2004-2010	5% to 6%	Private placements
Finnerty (2013)	1991-1997	21%	Private placements
Finnerty (2013)	1997-2007	15%	Private placements
Chen et al. (2015)	1999-2012	10%	Private placements

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