

P-0816-10



Texas Windstorm
Insurance Association

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Chief Actuary
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August 15, 2016

Marilyn Hamilton
Property & Casualty Associate Commissioner
Texas Department of Insurance
P.O. Box 149104 M/C 104-PC
Austin, TX 78701

RE: Texas Windstorm Insurance Association Annual Rate Filing

Dear Marilyn:

Section 2210.352 of the Texas Insurance Code states that, not later than August 15 of each year, the Texas Windstorm Insurance Association shall file with the Department a proposed manual rate for all types and classes of risks written by the Association.

This filing is made pursuant to Section 2210.352 (a-1) and fulfills all of the requirements of that subsection.

On August 2, 2016, the Board of Directors of the Association voted to file for uniform 0% changes in both its residential and commercial rates. The most current actuarial review results in indications of +26% and +21% for residential and commercial rates, respectively. The complete residential and commercial analyses are attached.

If you or your staff has any questions or comments, please contact John Polak or me.

Respectfully,

A handwritten signature in black ink, appearing to read 'JCM', is written over the typed name.

James C. Murphy

Texas Windstorm Insurance Association

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**TEXAS WINDSTORM INSURANCE ASSOCIATION
COMMERCIAL PROPERTY RATE LEVEL REVIEW
2016**

July 2016

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INTRODUCTION

The Texas Windstorm Insurance Association (TWIA) has completed studies sufficient to support rate level indications for its commercial coverages. This report documents the procedures and results of this analysis.

DISTRIBUTION AND USE

This report was prepared for internal use by the management of TWIA. A complete copy of the report may be submitted to the Texas Department of Insurance (TDI or Department) for use in the approval of a rate change. This report may also be provided to the TWIA actuarial committee. Use of this report for other than the stated purpose may not be proper and must be preceded by written authorization.

RELIANCE UPON DATA

The following data and information used in this analysis were prepared by TWIA and are the responsibility of TWIA's management:

- TWIA losses and loss adjustment expenses
- TWIA written and earned premiums
- History of rate changes impacting TWIA commercial premium
- TWIA's statutory annual statements and insurance expense exhibits.

At the time of this analysis, some of the data was unaudited. The data was reviewed for reasonableness and consistency, and the TWIA written premium and paid loss data provided for this analysis were reconciled to TWIA's annual statements.

In addition to TWIA's own data, we utilized insurance industry premium and loss data supplied by the TDI.

We also used the results of two different hurricane simulation models -- one prepared by Applied Insurance Research (AIR) and one model prepared by Risk Management Solutions (RMS). Both models utilized TWIA exposure data as of 12/31/15. TWIA has not directly verified the accuracy of these simulation models, but has relied on documentation provided directly by the modeling firms and submission documentation provided to the Florida Commission on Hurricane Loss Projection Methodology to comply with Actuarial Standard of Practice #38, "Using Models Outside the Actuary's Area of Expertise."

LIMITATIONS

The indicated rate level change as shown in this report represents a reasonable estimate of the rate level necessary to cover the TWIA's expected costs of providing commercial wind/hail coverage. The actual costs of providing commercial property coverage for a specific year may differ substantially from the indicated rate level range shown in this report. The possibility of this variability arises from the fact that the events covered by TWIA are inherently unpredictable from year to year. The indicated rate level is, however, our best estimate of the expected annual cost of providing commercial wind/hail coverage.

This actuarial report provides professional input and guidance to TWIA; however, the final decision regarding implementation and actual rate level change is a management decision.

The attached exhibits should be considered an integral part of this report.

EXECUTIVE SUMMARY

This section provides a brief synopsis of the key findings and recommendations contained in our study.

1. We have estimated the indicated total rate level change using a combination of two different methodologies for projecting the expected hurricane portion of the indicated rate level. The indicated total rate level changes are shown in Exhibit 1 and the following table:

Indicated Rate Change: Long Term Hurricane Methodologies

Hurricane Projection Methodology	Indicated Rate Change
Actual Experience and Models Combined	+21%
Actual Industry Experience	+17%
Hurricane Simulation Models	+25%

The indicated rate change shown is based on a combination of actual industry experience and hurricane simulation models. The indications based on each of these methodologies alone are also shown for reference. All methodologies use a long-term approach to develop the hurricane portion of the indicated rate level.

The hurricane simulation models utilized are widely used for insurance company catastrophe management and ratemaking. Versions of these simulation models have undergone verification by and been approved by the Florida Commission on Hurricane Loss Projection Methodology.

2. The indicated rate level change includes different hurricane projection methodologies. The different methods were used because the actuarial methods used to incorporate hurricane losses into rate indications are still evolving. Traditionally, actuarial methods have been based on insurance industry hurricane loss experience. More recently, actuarial methods have incorporated the results of hurricane simulation models to minimize the weaknesses of the traditional approaches.

The method using actual industry experience relies on a more traditional approach and is based on 46 years of actual insurance industry premiums and losses and 165 years of actual hurricane experience. This method possesses the advantage of finding broader regulatory acceptance in many states (including Texas). The alternate method incorporates the results of hurricane simulation models. This has the advantage of minimizing many of the theoretical weaknesses of the traditional actuarial methodologies. The overall indication assigns equal weight to these hurricane projection methodologies.

3. The current rate indication is the same as the corresponding indication from the prior TWIA commercial rate study. A 5% rate increase, effective January 1, 2016, was offset by the introduction of actual losses and expenses from 2015.

Details on the key differences between the current and prior rate indications are described in the Analysis section of this report.

4. The indicated rate changes presented in this report reflect a separate provision for contributions to funding, including provisions for both the Catastrophe Reserve Trust Fund and the repayment of outstanding pre-event Class 1 public securities. The total funding provision is 20% of TWIA premium. The CRTF provision is necessary to rebuild the fund, which was completely depleted in order to pay losses associated with 2008 hurricanes. The Class 1 securities provision is necessary to repay \$500 million in outstanding debt issued in 2014.

The provision for reinsurance expense is 16.2% of TWIA premium. The provision for reinsurance expense reflects the estimated actual net cost of purchasing catastrophe reinsurance (reinsurance premiums paid net of the expected reduction in TWIA retained losses). Catastrophe reinsurance provides TWIA with annually renewable protection against large storm losses.

ACTUARIAL ANALYSIS

Overview of Analysis

The goal of the rate level adequacy review is to compare the current rate level to TWIA's expected costs for providing commercial property insurance coverage. This comparison is achieved by estimating the projected loss, loss adjustment expense (LAE), and fixed expense ratio for a prospective accident year and then comparing this ratio to the "permissible" loss, LAE, and fixed expense ratio. The permissible ratio is the portion of premium remaining to pay loss, LAE, and fixed expenses after payment of TWIA variable expenses. If the projected ratio is higher than the permissible ratio, then a rate increase is indicated. If the projected ratio is lower than the permissible, then a rate decrease is indicated.

The steps employed to estimate the projected loss, LAE, and fixed expense ratio are as follows:

1. Adjust historical premium to the current rate level (to facilitate calculation of historical loss ratios at current rates).
2. Determine LAE factors to add projected LAE to projected loss.
3. Estimate the projected non-hurricane loss and LAE ratio.
4. Estimate the projected hurricane loss and LAE ratio.
5. Estimate the projected fixed expense ratio.
6. Sum the projected non-hurricane and hurricane loss ratios and the projected fixed expense ratio to obtain the projected total loss, LAE, and fixed expense ratio.

The steps employed to determine the permissible loss and LAE ratio are as follows:

- (a) Analyze historical variable expense to premium ratios to estimate the projected total variable expense ratio.
- (b) Subtract the projected total variable expense ratio from 1.00 to derive the permissible loss, LAE and fixed expense ratio.

Steps 1-5 and (a)-(b) are described in more detail in the remainder of this report.

Earned Premium at Current Rates

Historical TWIA written premium is adjusted to the current rate level and adjusted to an earned basis based on a uniform monthly earning assumption. Earned premium at current rates for prior years permits the calculation of historical loss ratios at the current rate level. Exhibit 10 shows the calculation of earned premium at current rates.

Loss Adjustment Expense Factors

In Exhibit 4, the historical ratio of LAE to loss is analyzed to develop LAE factors. Separate LAE factors are developed for hurricane and non-hurricane losses. The hurricane LAE factors are developed based on the LAE to loss ratio for years with hurricanes. The non-hurricane LAE factors are developed based on the ratio for years without hurricanes. TWIA statutory annual statement incurred loss and LAE data is utilized to derive these ratios.

The indicated LAE to loss ratios are shown in Exhibit 4, Sheet 1. For hurricane losses, the indicated LAE ratio of 0.122 is equal to the weighted average of the nine hurricane years included in the analysis. For non-hurricane losses, the indicated ratio of 0.207 is equal to the weighted average of the most recent 10 non-hurricane years included in the analysis.

The development of these LAE factors is necessary to add LAE to the projected hurricane and non-hurricane loss ratios. The development of loss ratios is described in the following sections.

Projected Non-Hurricane Loss and LAE Ratio

Exhibit 2 shows the development of the projected non-hurricane loss and LAE ratio. The loss portion of this ratio is estimated by comparing the indicated ultimate non-hurricane loss for accident years 2006 - 2015 to the earned premium at current rates for the same ten years. The indicated ultimate non-hurricane loss for each year is based on actual paid loss as of 12/31/15 and the paid loss development method. LAE is then added to each year's ultimate loss through the non-hurricane LAE factor developed in Exhibit 4.

Paid loss development factors are selected based on both the current average of all available years and the prior selection. Given the positive skewness of the observed age-to-age

development factors, a straight average may be more preferable than an average excluding the highest and lowest observation to avoid understating the expected development.

Each year's estimated ultimate loss and LAE is compared to the earned premium at present rates.

The resulting loss and LAE ratios are then trended forward to the expected prospective inflation level. The net trend factor is equal to a loss trend offset by a premium trend. The loss trend is calculated using industry-wide construction cost and consumer price indices. Premium trend is derived from historical changes in average earned premium at present rates. Both premiums and losses are trended to current levels by applying the actual, historical changes in the appropriate data. Future premium and loss trends are selected based on all available and relevant data. Because the selected trends are estimates of the future trend between the current and prospective earned and accident dates, and because they are not used to trend historical experience to current premium and loss levels, it may not be necessary to use experience only from periods where both premium and loss data are available.

The resulting loss and LAE ratios for each accident year from 2006 - 2015 form the basis for the indicated projected loss and LAE ratio. The indicated loss and LAE ratio equals the premium-weighted average ratio from the 2006 - 2015 accident period. This method gives greater weight to more recent years due to TWIA's growth. Given the greater credibility normally associated with more recent experience and the potentially significant change in TWIA's commercial book of business due to the growth, this weighting may be more appropriate than a non-weighted average across all years.

Projected Hurricane Loss and LAE Ratio

Two different methods are used to develop the projected hurricane loss and LAE ratios. The first method is based on insurance industry and meteorological hurricane experience for the last 46 and 165 years, respectively. The other method is based on hurricane simulation models. The "46/165-year" method is utilized because the Texas Insurance Code required until recently the consideration of a 30-year minimum experience period. The simulation method is utilized because it minimizes many of the theoretical weaknesses of the historical method. These weaknesses include:

- A 46-year period is insufficient to measure long-term hurricane intensity.

- A 46-year period of insurance industry experience includes years where land use, population densities, construction techniques and materials, engineering techniques and building codes were different than today. These differences diminish the relevance of insurance data from several decades ago in evaluating today's commercial property rates.

Differences between the two methods are the result of expected variances in the frequency and severity of hurricanes, and fundamental differences between the aggregate historical industry exposures and current TWIA exposures. Because of the readily identifiable nature of hurricanes, there should be no over- or understatement of expected losses resulting from either method.

For each method, the projected hurricane loss ratio is estimated first. LAE is added to each loss ratio using the hurricane LAE factor developed in Exhibit 4. Each method's development of the projected hurricane loss ratio is described as follows:

Actual 46/165-Year Industry Hurricane Experience

In Exhibit 6, Texas insurance industry seacoast dwelling extended coverage experience for the 1970-2015 period is used in the development of a projected hurricane loss ratio. For each year, insurance industry loss ratios at current rates are calculated using information provided by the TDI. For the years where sufficient detail is available (1982-2015), these loss ratios are adjusted to TWIA's rate level and re-weighted based on the TWIA's current premium distribution by territory within the seacoast area.

A projected hurricane loss ratio is developed from these 46 years of loss ratios by separating the 46 years into the twelve hurricane years and thirty-four non-hurricane years. The 34 non-hurricane years are used to develop an estimated non-hurricane loss ratio.

Hurricane loss ratios are then estimated by subtracting the non-hurricane loss ratio from the total loss ratio in each of the twelve hurricane years. An average hurricane loss ratio for hurricane years is calculated as the average of the twelve hurricane loss ratios: 98.7%.

The 46-year period that underlies the selected hurricane loss ratio has experienced significantly fewer hurricanes than the long-term average. As shown in Exhibit 9, the annual hurricane frequency during this 46-year period is 0.281, while the annual frequency during the most recent 165-year period is 0.382. The 46-year period represents all years for which TWIA has been provided industry data by TDI. Because the expected frequency of hurricanes is unrelated to the availability of insurance industry data, there is no reason to use only the most recent 46-year period to estimate the expected frequency of hurricane activity. Given the relatively infrequent occurrence of hurricanes, the largest possible experience period should be considered in order to obtain the most credible result. The selected hurricane frequency is therefore set equal to the 165-year historical hurricane frequency. As shown in Exhibit 6, Sheet 1, multiplying the selected loss ratio for hurricane years by the selected hurricane frequency yields a projected hurricane loss ratio of 37.7%.

Hurricane Simulation Models

The projected hurricane loss ratio is determined by averaging two different hurricane simulation models: AIR Touchstone v3.0.1 and RMS RiskLink v15.0.1. Both models were run using exposure data provided by TWIA as of 12/31/2015. This exposure data included location-level detail including physical characteristics of each risk and all relevant coverages. Both models were run using historical (long-term) event rates and both results include loss amplification (demand surge) and exclude storm surge and loss adjustment expenses. A separate provision for storm surge was included, equal to 10% of the increase in modeled average annual losses due to the inclusion of storm surge in the model output. The AIR and RMS models generated 4,751 and 9,773 unique events, respectively, with the following distribution of intensity ratings in Texas:

Saffir-Simpson Category	AIR	RMS
Category 0	15.3%	61.4%
Category 1	35.3%	12.0%
Category 2	22.2%	6.5%
Category 3	18.4%	7.5%
Category 4	8.0%	10.3%
Category 5	0.8%	2.3%

The intensity at first landfall is shown for AIR and RMS events. Events shown as Category 0 include bypassing events and events making landfall in neighboring states or Mexico in addition to Cat 0 events that make landfall in TX.

As shown in Exhibits 7 and 8, these models yield projected hurricane loss ratios of 42.2% and 42.6%. The average of these loss ratios is 42.4%.

Fixed Expenses and Variable Permissible Loss and LAE Ratio

Exhibit 11 shows the expense assumptions used to develop the projected fixed expense ratio and the variable permissible loss and LAE ratio. Fixed expenses include general expenses and the net cost of reinsurance. The sum of these projected expenses provides for a 21.5% fixed expense ratio. Variable expenses include commission, taxes, and catastrophe trust fund contribution. Subtracting these expenses from 100% yields a variable permissible loss and LAE ratio of 62.0%.

As stated above, the expenses include a provision for an annual contribution to the catastrophe reserve trust fund, repayment of Class 1 public securities, and the projected net cost of TWIA's purchasing of reinsurance. The 20% provision for funding contribution is intended to permit the redevelopment of the catastrophe reserve trust fund and to repay outstanding pre-event public securities in order to reduce the potential for future year surcharges on TWIA and coastal insurance policies and assessments to TWIA members. The 16.2% provision for reinsurance expense reflects the estimated net actual cost of purchasing reinsurance (reinsurance premiums net of the expected reduction in TWIA retained losses). TWIA's purchasing of reinsurance provides additional current year protection to TWIA and coastal policyholders and TWIA members.

Indicated Rate Change

Exhibit 1 summarizes the indicated rate change using a combination of the two hurricane loss ratio projection methods. The individual indications resulting from the use of each methodology are also shown for reference. The indicated rate change for each method is calculated by dividing the total projected loss, LAE, and fixed expense ratio by the variable permissible loss

and LAE ratio. This method of calculating the indicated rate change assumes that TWIA's variable expenses vary proportionally with premium while the fixed expenses do not.

Data Issues

Reconciliation of Data to TWIA's Annual Statements

Exhibit 12, Sheets 1 and 2 show a reconciliation of the TWIA premium and loss data used in this report (ratemaking data) to TWIA's annual statements. Sheet 1 reconciles paid loss data by accident year; Sheet 2 reconciles written premium data by calendar year.

The paid loss reconciliation shows small differences between the ratemaking paid loss data and the annual statement data for all accident years except 2008 where relatively larger differences are indicated.

The written premium reconciliation shows the differences between the ratemaking written premium data and the annual statement data for calendar years 1993 - 2015. Differences of less than 1% exist for all recent years except 2010.

Key Differences Versus Prior Indications

The indicated rate change shown in this report is the same as the comparable indication based on the prior (July 2015) study. The indications are summarized in the following table.

Reconciliation of Current vs. Prior Indications

Rate Indication/Reason for Change	Impact of Change	Rate Indication
<i>Previous Rate Indication (Combined Method)</i>		+21%
TWIA Rate Level	-6%	
Change in Experience Period	+5%	
<i>Current Rate Indication (Combined Method)</i>		+21%

These reasons are discussed below:

TWIA Rate Level

The TWIA rate level increased 5% as a result of the most recent filing. This has a 6% impact (reduction) on indicated rates.

Change in Experience Period

The indicated rate change increased approximately 5% as a result of increases in the non-hurricane provision introduced with the most recent experience period.

SUMMARY OF EXHIBITS

<u>Exhibit Number</u>	<u>Exhibit Title or Purpose</u>
1	Summary of Indicated Rate Change
2	Projected Ultimate Non-Hurricane Loss & LAE Ratio
3	Paid Loss Development Factors and Premium and Loss Trend Analysis
4	Development of LAE Factor
5	Summary of Indicated Hurricane Loss & LAE Ratios
6	Development of Hurricane Loss Ratio – 46/165-Year Method
7	Hurricane Loss Ratio – AIR Model
8	Hurricane Loss Ratio – RMS Model
9	Texas Hurricanes 1850 - 2015
10	Earned Premium at Present Rates
11	Fixed Expenses and Variable Permissible Loss & LAE Ratios
12	Reconciliation of Premium Data to Annual Statement
13	Analysis of Current and Proposed Net Premium Income

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Summary of Indicated Rate Change
By Method for Projecting Hurricane Loss & LAE

Exhibit 1

Hurricane Projection Method (1)	Indicated Loss & LAE Ratio		Fixed Expenses (4)	Total (5)	Variable Permissible LLAE Ratio (6)	Indicated Rate Change (7)	Proposed Rate Change (8)
	Hurricane (2)	Non-Hurricane (3)					
Using Experience and Models	45.0%	8.7%	21.5%	75.2%	62.0%	+21%	+5.0%
Using Actual Industry Experience	42.3%	8.7%	21.5%	72.5%	62.0%	+17%	
Using Hurricane Models	47.6%	8.7%	21.5%	77.8%	62.0%	+25%	

Notes:

- (2) Exhibit 5
- (3) Exhibit 2, Sheet 1
- (4) Exhibit 11
- (5) = (2) + (3) + (4)
- (6) Exhibit 11
- (7) = (5) / (6) - 1
- (8) Selected

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Projected Ultimate Non-Hurricane Loss & LAE Ratio

Accident Year	Ultimate Non-Hurricane Loss	LAE Factor	Net Trend Factor	Projected Non-Hurricane Loss & LAE	Earned Premium at Current Rate Level	Indicated Non-Hurricane Loss & LAE Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2006	1,517,386	0.207	1.733	3,173,963	102,743,569	3.1%
2007	1,230,788	0.207	1.670	2,480,887	159,025,079	1.6%
2008	1,127,682	0.207	1.575	2,143,752	166,865,008	1.3%
2009	2,553,456	0.207	1.438	4,431,947	151,658,003	2.9%
2010	7,346,272	0.207	1.457	12,919,147	143,840,013	9.0%
2011	19,444,460	0.207	1.316	30,885,814	132,262,500	23.4%
2012	13,549,714	0.207	1.316	21,522,528	131,006,391	16.4%
2013	7,675,892	0.207	1.284	11,896,005	132,646,660	9.0%
2014	965,022	0.207	1.187	1,382,596	123,105,951	1.1%
2015	20,190,356	0.207	1.128	27,489,089	109,483,988	25.1%
Total	75,601,028			118,325,728	1,352,637,162	8.7%

Notes:

- (2) Exhibit 2, Sheet 2
- (3) Exhibit 4, Sheet 1
- (4) = Exhibit 2, Sheet 4
- (5) = (2) * [1 + (3)] * (4)
- (6) Exhibit 10, Sheet 1
- (7) = (5) / (6)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Projected Ultimate Non-Hurricane Loss

Accident Year	TWIA Non-Hurricane Paid Loss	Development Factor	Ultimate Non-Hurricane Loss
(1)	(2)	(3)	(4)
2006	1,517,386	1.000	1,517,386
2007	1,230,788	1.000	1,230,788
2008	1,127,682	1.000	1,127,682
2009	2,553,456	1.000	2,553,456
2010	7,302,457	1.006	7,346,272
2011	19,119,430	1.017	19,444,460
2012	13,284,033	1.020	13,549,714
2013	7,338,329	1.046	7,675,892
2014	874,907	1.103	965,022
2015	15,922,994	1.268	20,190,356
Total	70,271,462		75,601,028

Notes:

- (2) Exhibit 2, Sheet 3, as of 12/31/15
- (3) Exhibit 3, Sheet 1
- (4) = (2) * (3)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Summary of TWIA Historical Paid Loss as of 12/31/15

Accident Year	Paid Loss Excluding Expense			Total
	Non-Hurricane (1)	Hurricane (2)	Hurricane (3)	
2006	1,517,386		0	1,517,386
2007	1,230,788		4,379,850	5,610,638
2008	1,127,682		852,530,232	853,657,914
2009	2,553,456		0	2,553,456
2010	7,302,457		0	7,302,457
2011	19,119,430		0	19,119,430
2012	13,284,033		0	13,284,033
2013	7,338,329		0	7,338,329
2014	874,907		0	874,907
2015	15,922,994		0	15,922,994
Total	70,271,462	856,910,082	927,181,544	

Notes:

- (2), (3) Provided by TWIA, includes commercial and farm
- (4) = (2) + (3)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Calculation of Net Trend Factors

Year / Quarter	Average EPPR		
(1)	(2)	(3) Current Average Earned Date	7/1/2015
2008 / 4	11,491.97	(4) Current Average Accident Date	7/1/2015
2009 / 4	10,802.58	(5) Prospective Average Earned / Accident Date	1/1/2018
2010 / 4	10,615.48	(6) Premium Trend Length	2.500
2011 / 4	9,882.53	(7) Loss Trend Length	2.500
2012 / 4	10,246.12	(8) Selected Premium Trend	-2.4%
2013 / 4	10,185.55	(9) Selected Loss Trend	2.4%
2014 / 4	9,713.54		
2015 / 4	9,371.22		

Accident Year	Current Premium Trend	Current Loss Trend	Prospective Premium Trend	Prospective Loss Trend	Net Trend Factor
(10)	(11)	(12)	(13)	(14)	(15)
2006	0.777	1.193	0.941	1.061	1.733
2007	0.796	1.178	0.941	1.061	1.670
2008	0.815	1.139	0.941	1.061	1.575
2009	0.867	1.106	0.941	1.061	1.438
2010	0.883	1.140	0.941	1.061	1.457
2011	0.948	1.106	0.941	1.061	1.316
2012	0.915	1.067	0.941	1.061	1.316
2013	0.920	1.047	0.941	1.061	1.284
2014	0.965	1.015	0.941	1.061	1.187
2015	1.000	1.000	0.941	1.061	1.128

Notes:

- (2) Exhibit 3, Sheet 2 (10)
- (3) Latest Year / Quarter Ending Date - 6 Months
- (4) Latest Accident Year Ending Date - 6 Months
- (5) Rate Effective Date + 12 Months
- (6) = (5) - (3)
- (7) = (5) - (4)
- (8) Exhibit 3, Sheet 2
- (9) Exhibit 3, Sheet 3a
- (11) = (2) Indexed to 2015 / 4
- (12) Exhibit 3, Sheet 3a
- (13) = [1 + (8)] ^ (6)
- (14) = [1 + (9)] ^ (7)
- (15) = [(12) * (14)] / [(11) * (13)]

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Paid Loss Development Factors
TWIA Commercial Property Paid Loss

Accident Year	Months of Development							
	12 (1)	24 (2)	36 (3)	48 (4)	60 (5)	72 (6)	84 (7)	(8)
2006		1,210	1,517	1,517	1,517	1,517	1,517	1,517
2007		1,095	1,225	1,231	1,231	1,231	1,231	1,231
2008		952	1,040	1,040	1,128	1,128	1,128	1,128
2009		706	2,289	2,553	2,553	2,553	2,553	2,553
2010		4,489	6,162	6,783	7,280	7,280	7,302	
2011		13,360	16,138	18,435	18,758	19,119		
2012		8,512	11,404	13,135	13,284			
2013		6,886	7,243	7,338				
2014		641	875					
2015		15,923						

Accident Year	Development Factors							
	12 - 24 (1)	24 - 36 (2)	36 - 48 (3)	48 - 60 (4)	60 - 72 (5)	72 - 84 (6)	84 - Ult (7)	(8)
2006		1.254	1.000	1.000	1.000	1.000	1.000	
2007		1.118	1.005	1.000	1.000	1.000	1.000	
2008		1.093	1.000	1.085	1.000	1.000	1.000	
2009		3.241	1.115	1.000	1.000	1.000	1.000	
2010		1.373	1.101	1.073	1.000	1.003		
2011		1.208	1.142	1.018	1.019			
2012		1.340	1.152	1.011				
2013		1.052	1.013					
2014		1.365						
Average		1.479	1.055	1.027	1.003	1.001	1.000	
Avg x hi / lo		1.250	1.063	1.020	1.000	1.000	1.000	
Avg 3 Year		1.252	1.102	1.034	1.006	1.001	1.000	
Avg 5 Year		1.267	1.105	1.037	1.004	1.001	1.000	
Prior		1.471	1.055	1.024	1.003	1.021	1.013	1.000
Selected		1.150	1.055	1.025	1.003	1.011	1.006	1.000
Cumulative		1.268	1.103	1.046	1.020	1.017	1.006	1.000

Notes:

Provided by TWIA, includes commercial and farm,
excludes hurricanes Brett (1999), Claudette (2003), Rita (2005), Humberto (2007), Dolly (2008), and Ike (2008)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review

Premium Trend Analysis
TWIA Commercial Earned Premium at Present Rates

Year / Quarter	Policies In-Force	Annualized		On- Level Factors	Premium at Present Rates		Earned Premium at Present Rates		Exponential Fitted Trends			
		In-Force	Written Premium		Written	Earned	Annualized Average	All-Year	5-Year	4-Year	3-Year	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2007 / 2	14,309		33,066,784	1.633	53,991,600	39,871,315						
2007 / 3	15,543		34,446,242	1.633	56,243,986	45,089,454						
2007 / 4	15,186		23,752,321	1.633	38,782,901	46,121,012						
2008 / 1	14,705		17,918,266	1.583	28,363,311	45,449,734	176,531,514					
2008 / 2	14,506	14,960	29,792,537	1.549	46,153,125	44,275,558	180,935,757	12,094.33	11,355.45			
2008 / 3	15,154	14,936	31,242,113	1.549	48,398,737	41,059,450	176,905,753	11,843.95	11,285.22			
2008 / 4	14,627	14,818	19,084,269	1.549	29,564,406	39,501,846	170,286,587	11,491.97	11,215.41			
2009 / 1	14,096	14,672	22,603,019	1.397	31,570,731	38,216,526	163,053,379	11,113.33	11,146.04			
2009 / 2	13,835	14,512	31,063,838	1.340	41,628,514	38,138,940	156,916,762	10,812.99	11,077.10			
2009 / 3	14,052	14,290	34,959,552	1.340	46,849,143	38,176,792	154,034,104	10,778.96	11,008.58			
2009 / 4	13,862	14,057	22,643,071	1.340	30,343,881	37,318,244	151,850,503	10,802.58	10,940.49			
2010 / 1	13,510	13,888	21,743,758	1.340	29,138,715	37,213,270	150,847,246	10,861.70	10,872.82			
2010 / 2	13,517	13,775	30,585,736	1.340	40,987,811	36,899,570	149,607,876	10,860.83	10,805.57			
2010 / 3	13,796	13,703	30,105,285	1.340	40,343,961	35,643,345	147,074,429	10,732.81	10,738.73			
2010 / 4	13,497	13,626	19,736,774	1.340	26,449,165	34,886,367	144,642,552	10,615.48	10,672.31			
2011 / 1	13,063	13,524	18,744,820	1.276	23,923,668	33,699,413	141,128,695	10,435.33	10,606.30	10,312.22		
2011 / 2	12,873	13,388	28,450,431	1.276	36,310,761	32,172,569	136,401,694	10,188.55	10,540.69	10,274.86		
2011 / 3	13,052	13,214	30,646,904	1.276	39,114,079	32,009,625	132,767,975	10,047.33	10,475.50	10,237.63		
2011 / 4	13,168	13,080	22,169,693	1.276	28,294,770	31,383,167	129,264,775	9,882.53	10,410.70	10,200.55		
2012 / 1	13,081	13,041	23,778,724	1.216	28,903,188	32,491,578	128,056,940	9,819.38	10,346.31	10,163.59	10,283.74	
2012 / 2	12,750	13,028	31,324,576	1.216	38,075,218	33,634,594	129,518,964	9,941.49	10,282.31	10,126.77	10,234.45	
2012 / 3	13,263	13,039	32,445,954	1.216	39,438,259	33,579,198	131,088,537	10,053.48	10,218.71	10,090.09	10,185.39	
2012 / 4	13,030	13,048	22,975,141	1.216	27,926,427	33,988,583	133,693,953	10,246.12	10,155.51	10,053.53	10,136.57	
2013 / 1	12,985	13,019	23,791,092	1.158	27,541,163	33,502,281	134,704,656	10,346.77	10,092.69	10,017.11	10,087.99	10,435.96
2013 / 2	12,897	13,025	32,039,377	1.158	37,089,584	33,005,436	134,075,498	10,293.41	10,030.26	9,980.82	10,039.64	10,334.23
2013 / 3	13,143	13,029	34,754,762	1.158	40,232,981	33,304,150	133,800,450	10,269.63	9,968.22	9,944.66	9,991.52	10,233.50
2013 / 4	13,048	13,016	22,450,741	1.158	25,989,539	32,763,293	132,575,159	10,185.55	9,906.57	9,908.64	9,943.63	10,133.75
2014 / 1	12,825	12,998	21,228,508	1.103	23,404,430	31,936,581	131,009,460	10,079.01	9,845.29	9,872.74	9,895.97	10,034.97
2014 / 2	12,743	12,959	34,367,769	1.103	37,890,465	31,790,451	129,794,476	10,015.78	9,784.39	9,836.98	9,848.54	9,937.15
2014 / 3	12,507	12,860	28,573,600	1.103	31,502,394	30,364,414	126,854,739	9,864.10	9,723.87	9,801.34	9,801.34	9,840.28
2014 / 4	12,343	12,693	20,472,814	1.103	22,571,277	29,198,847	123,290,294	9,713.54	9,663.73	9,765.83	9,754.36	9,744.36
2015 / 1	12,194	12,526	23,219,646	1.050	24,380,628	29,281,909	120,635,622	9,631.11	9,603.95	9,730.45	9,707.61	9,649.38
2015 / 2	11,845	12,335	31,964,269	1.050	33,562,482	28,502,707	117,347,877	9,513.79	9,544.55	9,695.20	9,661.08	9,555.32
2015 / 3	11,888	12,145	27,061,328	1.050	28,414,394	27,763,747	114,747,210	9,448.20	9,485.51	9,660.08	9,614.77	9,462.18
2015 / 4	11,542	11,967	16,470,691	1.050	17,294,226	26,600,596	112,148,958	9,371.22	9,426.84	9,590.21	9,568.69	9,369.94
(14) Average Annual Change									-2.5%	-1.5%	-1.9%	-3.8%
(15) Correlation Coefficient									80.9%	47.3%	50.9%	98.2%
(16) Selected Premium Trend												-2.4%

- Notes: (2) Provided by TWIA
(3) Calculated from (2) using uniform quarterly earning assumption
(4) Provided by TWIA
(5) Factor to bring written premium to current rate level
(6) = (4) * (5) Indexed to 2014 / 4
(7) Calculated from (6) using uniform monthly earning assumption
(8) = Sum of (7) for prior 4 quarters
(9) = (8) / (3)
(10) - (13) = (9) fitted to an exponential distribution, excluding 2007 / 2 - 2007 / 4
(14) Fitted average annual change, excluding 2007 / 2 - 2007 / 4
(15) Evaluates the predictability of the fitted curve
(16) Selected based on judgment

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Loss Trend Analysis
Summary of Indices and Calculation of Prospective Loss Costs

Calendar Year Ending 12/31/xx	<u>Commercial</u>		<u>Residential</u>		Modified CPI	Weighted Average
	Statewide Boeckh	Coastal Boeckh	Statewide Boeckh	Coastal Boeckh		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2006	1.277	1.280	1.223	1.228	1.086	1.193
2007	1.217	1.216	1.176	1.180	1.063	1.178
2008	1.173	1.168	1.156	1.153	1.052	1.139
2009	1.131	1.120	1.134	1.124	1.065	1.106
2010	1.152	1.164	1.127	1.127	1.066	1.140
2011	1.112	1.125	1.114	1.120	1.049	1.106
2012	1.071	1.079	1.084	1.090	1.030	1.067
2013	1.049	1.055	1.053	1.059	1.024	1.047
2014	1.018	1.017	1.019	1.016	1.010	1.015
2015	1.000	1.000	1.000	1.000	1.000	1.000

Factors to Adjust For Prospective Loss Costs

(8) Fitted Trend	2.4%	2.8%	2.8%	3.0%	1.2%	2.4%
(9) Cost Factor	1.061	1.070	1.071	1.076	1.031	1.061

Notes:

- (2) = Exhibit 3, Sheet 3b trended forward to 12/31/2015
- (3) = Exhibit 3, Sheet 3c trended forward to 12/31/2015
- (4) = Residential Exhibit 3, Sheet 3b trended forward to 12/31/2015
- (5) = Residential Exhibit 3, Sheet 3c trended forward to 12/31/2015
- (6) = Exhibit 3, Sheet 3d
- (7) = 25% CPI and 75% Boeckh (most appropriate available by year)
- (8) = (2) - (7) fitted to an exponential curve using 5 years' data (where available)
- (9) = $[1 + (8)]^{2.5}$ (trended from 7/1/2015 to 1/1/2018)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Loss Trend Analysis
Boeckh Commercial Construction Index Trend (Statewide)

Calendar Year Ending	Texas Statewide Index	Fitted Trends All Years	
		Linear	Exponential
(1)	(2)	(3)	(4)
3/31/2006	1809.91		
6/30/2006	1838.89		
9/30/2006	1872.87		
12/31/2006	1908.61		
3/31/2007	1939.13		
6/30/2007	1964.32		
9/30/2007	1986.91		
12/31/2007	2002.86	2008.58	2015.39
3/31/2008	2017.57	2021.81	2027.41
6/30/2008	2035.39	2035.04	2039.50
9/30/2008	2055.55	2048.27	2051.66
12/31/2008	2078.92	2061.51	2063.90
3/31/2009	2108.32	2074.74	2076.21
6/30/2009	2141.00	2087.97	2088.59
9/30/2009	2157.97	2101.20	2101.05
12/31/2009	2155.18	2114.43	2113.58
3/31/2010	2141.73	2127.66	2126.19
6/30/2010	2124.68	2140.89	2138.87
9/30/2010	2115.34	2154.12	2151.63
12/31/2010	2116.48	2167.35	2164.46
3/31/2011	2127.08	2180.59	2177.37
6/30/2011	2141.50	2193.82	2190.35
9/30/2011	2163.68	2207.05	2203.42
12/31/2011	2192.00	2220.28	2216.56
3/31/2012	2217.77	2233.51	2229.78
6/30/2012	2239.55	2246.74	2243.08
9/30/2012	2258.47	2259.97	2256.46
12/31/2012	2275.37	2273.20	2269.92
3/31/2013	2288.71	2286.44	2283.45
6/30/2013	2300.16	2299.67	2297.07
9/30/2013	2312.55	2312.90	2310.77
12/31/2013	2324.29	2326.13	2324.56
3/31/2014	2338.66	2339.36	2338.42
6/30/2014	2357.74	2352.59	2352.37
9/30/2014	2375.53	2365.82	2366.40
12/31/2014	2394.51	2379.05	2380.51
3/31/2015	2413.17	2392.29	2394.71
6/30/2015	2425.58	2405.52	2408.99
9/30/2015	2434.16	2418.75	2423.36
12/31/2015	2437.78	2431.98	2437.81
Annual Trend		2.2%	2.4%
R-Squared		0.956	0.958

Notes:

- (2) = Average Index for Austin, Corpus Christi, Dallas, El Paso, Fort Worth, Houston, Odessa, and San Antonio
- (3) - (4) = (2) fitted to linear and exponential distributions

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Loss Trend Analysis
Boeckh Commercial Construction Index Trend (Coastal)

Calendar Year Ending	Texas	Fitted Trends	
	Coastal Index	All Years Linear	Exponential
(1)	(2)	(3)	(4)
3/31/2004			
6/30/2004			
9/30/2004			
12/31/2004			
3/31/2005			
6/30/2005			
9/30/2005			
12/31/2005	1800.08	1885.45	1895.13
3/31/2006	1828.22	1900.11	1908.05
6/30/2006	1858.44	1914.76	1921.07
9/30/2006	1894.75	1929.42	1934.17
12/31/2006	1930.37	1944.08	1947.36
3/31/2007	1959.70	1958.74	1960.64
6/30/2007	1988.13	1973.39	1974.01
9/30/2007	2013.31	1988.05	1987.48
12/31/2007	2031.76	2002.71	2001.03
3/31/2008	2050.67	2017.36	2014.68
6/30/2008	2068.99	2032.02	2028.42
9/30/2008	2089.34	2046.68	2042.26
12/31/2008	2114.71	2061.34	2056.19
3/31/2009	2145.16	2075.99	2070.21
6/30/2009	2180.12	2090.65	2084.33
9/30/2009	2204.40	2105.31	2098.55
12/31/2009	2204.50	2119.96	2112.86
3/31/2010	2186.90	2134.62	2127.27
6/30/2010	2162.64	2149.28	2141.78
9/30/2010	2138.17	2163.93	2156.39
12/31/2010	2121.49	2178.59	2171.10
3/31/2011	2123.27	2193.25	2185.90
6/30/2011	2135.31	2207.91	2200.81
9/30/2011	2160.02	2222.56	2215.82
12/31/2011	2194.60	2237.22	2230.94
3/31/2012	2222.30	2251.88	2246.15
6/30/2012	2245.64	2266.53	2261.47
9/30/2012	2266.95	2281.19	2276.90
12/31/2012	2288.14	2295.85	2292.43
3/31/2013	2305.89	2310.50	2308.06
6/30/2013	2318.32	2325.16	2323.81
9/30/2013	2329.99	2339.82	2339.65
12/31/2013	2341.89	2354.48	2355.61
3/31/2014	2362.28	2369.13	2371.68
6/30/2014	2386.51	2383.79	2387.85
9/30/2014	2407.30	2398.45	2404.14
12/31/2014	2428.32	2413.10	2420.54
3/31/2015	2443.32	2427.76	2437.05
6/30/2015	2455.44	2442.42	2453.67
9/30/2015	2464.89	2457.07	2470.41
12/31/2015	2470.01	2471.73	2487.25
Annual Trend		2.4%	2.8%
R-Squared		0.938	0.928

Notes:

- (2) = Average Index for Corpus Christi and Houston
- (3) - (4) = (2) fitted to linear and exponential distributions

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Loss Trend Analysis
Modified Consumer Price Index - External Trend

Calendar Year Ending	Modified CPI	Fitted Trends		5 Years		4 Years		3 Years		Exponential
		All Years Linear	Exponential	Linear	Exponential	Linear	Exponential	Linear		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
9/30/2005	170.66	173.06	173.17							
12/31/2005	171.45	173.46	173.55							
3/31/2006	171.94	173.86	173.93							
6/30/2006	172.99	174.26	174.32							
9/30/2006	174.54	174.66	174.70							
12/31/2006	175.48	175.06	175.09							
3/31/2007	176.25	175.46	175.48							
6/30/2007	177.33	175.86	175.87							
9/30/2007	178.34	176.26	176.25							
12/31/2007	179.24	176.66	176.64							
3/31/2008	180.31	177.06	177.04							
6/30/2008	180.58	177.46	177.43							
9/30/2008	181.04	177.86	177.82							
12/31/2008	181.06	178.26	178.21							
3/31/2009	180.55	178.66	178.61							
6/30/2009	180.07	179.06	179.00							
9/30/2009	179.30	179.46	179.40							
12/31/2009	178.80	179.86	179.79							
3/31/2010	178.46	180.26	180.19							
6/30/2010	178.56	180.66	180.59							
9/30/2010	178.59	181.06	180.99							
12/31/2010	178.72	181.46	181.39							
3/31/2011	178.97	181.86	181.79	180.02	180.06					
6/30/2011	179.61	182.26	182.19	180.59	180.61					
9/30/2011	180.52	182.66	182.59	181.16	181.17					
12/31/2011	181.55	183.06	183.00	181.73	181.73					
3/31/2012	182.78	183.46	183.40	182.30	182.29	183.14	183.17			
6/30/2012	183.87	183.86	183.81	182.87	182.85	183.62	183.64			
9/30/2012	184.57	184.26	184.21	183.44	183.42	184.11	184.11			
12/31/2012	185.03	184.66	184.62	184.01	183.98	184.59	184.59			
3/31/2013	185.38	185.06	185.03	184.58	184.55	185.07	185.06	184.81	184.82	
6/30/2013	185.51	185.46	185.44	185.15	185.12	185.55	185.54	185.33	185.33	
9/30/2013	185.82	185.86	185.85	185.72	185.69	186.03	186.02	185.84	185.84	
12/31/2013	186.03	186.26	186.26	186.29	186.26	186.51	186.50	186.36	186.36	
3/31/2014	186.43	186.66	186.67	186.86	186.84	187.00	186.98	186.88	186.87	
6/30/2014	186.87	187.06	187.09	187.43	187.42	187.48	187.47	187.39	187.39	
9/30/2014	187.59	187.46	187.50	188.00	187.99	187.96	187.95	187.91	187.90	
12/31/2014	188.62	187.86	187.91	188.57	188.57	188.44	188.43	188.43	188.42	
3/31/2015	189.46	188.26	188.33	189.14	189.16	188.92	188.92	188.94	188.94	
6/30/2015	189.59	188.66	188.75	189.71	189.74	189.40	189.41	189.46	189.46	
9/30/2015	190.03	189.06	189.16	190.28	190.33	189.89	189.90	189.98	189.98	
12/31/2015	190.50	189.46	189.58	190.85	190.91	190.37	190.39	190.50	190.51	
Annual Trend		0.8%	0.9%	1.2%	1.2%	1.0%	1.0%	1.1%	1.1%	
R-Squared		0.890	0.888	0.965	0.962	0.973	0.973	0.965	0.966	

Notes:

- (2) = Weighted average of CPI for Lodging, Apparel, Furnishings, and Medical Care
- (3) - (10) = (2) fitted to linear and exponential distributions

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Development of LAE factor Using TWIA Commercial + Residential Experience

Accident Year	Projected Ultimate Loss (1)	Projected Ultimate LAE (2)	Projected Ultimate LAE (3)	Ultimate LAE to Loss Ratio (4)	Hurricane Indicator (5)
1979		1,423		0.103	
1980		12,911		0.038	H
1981		2,512	1,318	0.525	
1982		796	543	0.682	
1983		148,999	565	0.004	H
1984		999	9,127	9.136	
1985		512	324	0.633	
1986		881	395	0.448	H
1987		1,897	674	0.355	
1988		1,160	774	0.667	
1989		12,296	1,036	0.084	H
1990		335	2,833	8.457	
1991		1,217	445	0.366	
1992		489	687	1.405	
1993		3,375	839	0.249	
1994		679	1,121	1.651	
1995		2,977	397	0.133	
1996		1,166	925	0.793	
1997		2,964	806	0.272	
1998		22,401	1,704	0.076	
1999		8,773	4,551	0.519	H
2000		6,227	2,433	0.391	
2001		24,605	1,882	0.076	
2002		5,167	2,790	0.540	
2003		155,001	5,526	0.036	H
2004		5,167	4,270	0.826	
2005		154,981	20,229	0.131	H
2006		4,276	1,110	0.260	
2007		15,746	4,941	0.314	H
2008		2,595,925	342,028	0.132	H
2009		10,384	2,213	0.213	
2010		18,194	4,271	0.235	
2011		94,915	14,877	0.157	
2012		66,390	15,143	0.228	
2013		73,006	13,555	0.186	
2014		7,846	6,124	0.781	
2015		159,169	32,477	0.204	
All Years Total	3,625,761	503,568		0.139	
Hurricane Years Total	3,105,513	379,759		0.122	
Non-Hurricane Years					
Total	520,248	123,809		0.238	
10 Year	434,180	89,770		0.207	

Notes:

- (2) Exhibit 4, Sheet 2
- (3) Exhibit 4, Sheet 4
- (4) = (3) / (2)
- (5) "H" indicates hurricane year

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Ultimate Loss (TWIA All Lines)

Accident Year	Incurred Loss at 12/31/15	Development Factor	Indicated Ultimate Loss
(1)	(2)	(3)	(4)
1978			129
1979			1,423
1980			12,911
1981			2,512
1982			796
1983			148,999
1984			999
1985			512
1986			881
1987			1,897
1988			1,160
1989			12,296
1990			335
1991			1,217
1992			489
1993			3,375
1994			679
1995			2,977
1996			1,166
1997			2,964
1998			22,401
1999			8,773
2000			6,227
2001			24,605
2002			5,167
2003			155,001
2004			5,167
2005			154,981
2006			4,276
2007			15,746
2008			2,595,925
2009	10,384	1.000	10,384
2010	18,267	0.996	18,194
2011	96,263	0.986	94,915
2012	66,724	0.995	66,390
2013	72,860	1.002	73,006
2014	7,854	0.999	7,846
2015	147,927	1.076	159,169

Notes:

- (2) Exhibit 4, Sheet 3
- (3) Exhibit 4, Sheet 3
- (4) 2004 - 2011: (2) * (3); 1979 - 2003: from prior TWIA annual statements

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Incurred Loss Development Factors
TWIA Schedule P Incurred Loss (Including IBNR)

Accident Year	Months of Development							
	12 (1)	24 (2)	36 (3)	48 (4)	60 (5)	72 (6)	84 (7)	
2006		4,471	4,616	4,507	4,279	4,365	4,284	4,276
2007		16,446	15,813	15,537	15,834	15,867	15,750	15,746
2008		1,902,481	1,774,393	2,273,398	2,384,020	2,680,497	2,632,000	2,595,925
2009		8,267	10,825	10,581	10,732	10,453	10,404	10,384
2010		15,215	18,166	18,173	18,522	18,361	18,267	
2011		94,870	96,967	97,503	96,828	96,263		
2012		62,722	69,764	67,287	66,724			
2013		77,204	75,204	72,860				
2014		6,739	7,854					
2015		147,927						

Accident Year	Development Factors						
	12 - 24 (1)	24 - 36 (2)	36 - 48 (3)	48 - 60 (4)	60 - 72 (5)	72 - 84 (6)	84 - Ult (7)
2006		1.032	0.976	0.949	1.020	0.981	0.998
2007		0.962	0.983	1.019	1.002	0.993	1.000
2008		0.933	1.281	1.049	1.124	0.982	0.986
2009		1.309	0.977	1.014	0.974	0.995	0.998
2010		1.194	1.000	1.019	0.991	0.995	
2011		1.022	1.006	0.993	0.994		
2012		1.112	0.964	0.992			
2013		0.974	0.969				
2014		1.165					

Average		1.078	1.020	1.005	1.018	0.989	0.996	
Avg x hi / lo		1.066	0.985	1.007	1.002	0.990	0.998	
Avg 3 Year		1.084	0.980	1.001	0.986	0.991	0.995	
Avg 5 Year		1.094	0.983	1.013	1.017	0.989	0.996	
Prior		1.065	1.016	1.010	1.020	0.992	0.998	1.000
Selected		1.077	0.997	1.007	1.009	0.990	0.996	1.000
Cumulative		1.076	0.999	1.002	0.995	0.986	0.996	1.000

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Ultimate LAE (TWIA All Lines)

Accident Year	Incurred ALAE at 12/31/15	Development Factor	Indicated Ultimate ALAE	Incurred ULAE	Incurred LAE
(1)	(2)	(3)	(4)	(5)	(6)
1979					147
1980					488
1981					1,318
1982					543
1983					565
1984					9,127
1985					324
1986			160	235	395
1987			270	404	674
1988			652	122	774
1989			235	801	1,036
1990			2,727	106	2,833
1991			119	326	445
1992			403	284	687
1993			270	569	839
1994			806	315	1,121
1995			192	205	397
1996			698	227	925
1997			355	451	806
1998			892	812	1,704
1999			3,920	631	4,551
2000			1,757	676	2,433
2001			1,209	673	1,882
2002			1,207	1,583	2,790
2003			3,643	1,883	5,526
2004			3,643	627	4,270
2005	15,227	1.000	15,227	5,002	20,229
2006	860	1.000	860	250	1,110
2007	2,489	1.000	2,489	2,452	4,941
2008	97,249	1.000	97,249	244,779	342,028
2009	223	1.000	223	1,990	2,213
2010	324	1.009	327	3,944	4,271
2011	629	0.961	604	14,273	14,877
2012	632	0.957	605	14,538	15,143
2013	715	0.945	676	12,879	13,555
2014	493	0.973	480	5,644	6,124
2015	973	1.119	1,089	31,388	32,477

Notes:

- (2) Exhibit 4, Sheet 5
- (3) Exhibit 4, Sheet 5
- (4) 2005 - 2015: (2) * (3); 1986 - 2004: from TWIA's annual statements
- (5) From TWIA's annual statements
- (6) 1986 - 2015: (4) + (5); prior years from prior TWIA annual statements

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Incurred ALAE Development Factors
TWIA Schedule P Incurred ALAE (Including IBNR)

Accident Year	Months of Development							
	12 (1)	24 (2)	36 (3)	48 (4)	60 (5)	72 (6)	84 (7)	(8)
2005		12,902	16,742	18,549	16,151	15,253	15,243	15,227
2006		704	891	899	879	867	860	860
2007		2,660	3,107	2,921	2,519	2,497	2,490	2,489
2008		167,316	139,787	106,761	111,632	120,296	92,426	97,249
2009		7,335	359	226	231	223	223	223
2010		391	312	322	316	335	324	
2011		515	592	609	682	629		
2012		516	679	719	632			
2013		802	806	715				
2014		516	493					
2015		973						

Accident Year	Development Factors							
	12 - 24 (1)	24 - 36 (2)	36 - 48 (3)	48 - 60 (4)	60 - 72 (5)	72 - 84 (6)	84 - Ult (7)	(8)
2005		1.298	1.108	0.871	0.944	0.999	0.999	
2006		1.266	1.009	0.978	0.986	0.992	1.000	
2007		1.168	0.940	0.862	0.991	0.997	1.000	
2008		0.835	0.764	1.046	1.078	0.768	1.052	
2009		0.049	0.630	1.022	0.965	1.000	1.000	
2010		0.798	1.032	0.981	1.060	0.967		
2011		1.150	1.029	1.120	0.922			
2012		1.316	1.059	0.879				
2013		1.005	0.887					
2014		0.955						
Average		0.98	0.94	0.97	0.99	0.95	1.01	
Avg x hi / lo		1.06	0.96	0.96	0.99	0.99	1.00	
Avg 3 Year		1.09	0.99	0.99	0.98	0.91	1.02	
Avg 5 Year		1.04	0.93	1.01	1.00	0.94	1.01	
Prior		1.15	1.03	1.00	1.01	0.96	1.00	1.00
Selected		1.15	1.03	0.99	1.00	0.95	1.01	1.00
Cumulative		1.12	0.97	0.95	0.96	0.96	1.01	1.00

Texas Windstorm Insurance Association
 Commercial Property - Wind & Hail
 Rate Level Review
 Summary of Indicated Hurricane Loss & LAE Ratios

Basis for Hurricane Loss Ratio	Indicated Loss Ratio	LAE Factor	Indicated Loss & LAE Ratio
(1)	(2)	(3)	(4)
Industry Experience	37.7%	0.122	42.3%
<u>Hurricane Models</u>			
AIR Model	42.2%	0.122	47.3%
RMS Model	42.6%	0.122	47.8%
Average of Models	42.4%	0.122	47.6%

Notes:

(2) Exhibit 6 - Exhibit 8, Sheet 1

(3) Exhibit 4, Sheet 1

(4) = (2) * [1 + (3)]

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Industry Experience -- Commercial Extended Coverage
1970 - 2015 -- Hurricane Years Only

Accident Year	Earned Premium at Current TWIA Rate Level	Incurred Loss Ratio
(1)	(2)	(3)
1970	55,577,463	41.5%
1971	60,038,383	93.1%
1980	66,707,221	57.6%
1983	39,745,107	310.1%
1986	49,202,861	9.6%
1989	79,171,107	5.8%
1990	71,977,927	80.4%
1999	156,871,061	9.6%
2003	213,267,532	27.1%
2005	303,997,530	199.4%
2007	422,852,057	3.4%
2008	396,186,209	441.8%
<hr/>		
(4)	Simple Average Loss Ratio for Hurricane Years	106.6%
(5)	Selected Non-Hurricane Loss Ratio	7.9%
(6)	Average Hurricane Loss Ratio for Hurricane Years	98.7%
(7)	Historical Hurricane Frequency	
	(a) 46.3-Year (10/1/1969 - 12/31/2015)	0.281 (1 Hurricane Every 3.6 years)
	(b) 165-Year (1/1/1851 - 12/31/2015)	0.382 (1 Hurricane Every 2.6 years)
	Selected Frequency	0.382 (1 Hurricane Every 2.6 years)
(8)	Indicated Hurricane Loss Ratio	37.7%

Notes:

- (2) Exhibit 6, Sheet 2. 1999 year ending 12/31/99; all other accident years ending 9/30/xx
- (3) Exhibit 6, Sheet 2. 1999 year ending 12/31/99; all other accident years ending 9/30/xx
- (4) = Average of (3)
- (5) Exhibit 6, Sheet 2
- (6) = (4) - (5)
- (7) Exhibit 9
- (8) = (6) * (7) Selected

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Industry Experience -- Commercial Extended Coverage
1970 - 2015

Accident Year	Earned Premium	Earned Premium at 1992 CMR	Earned Premium at Current Rates	Incurred Losses	Incurred Loss Ratio	Hurricane Indicator
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	10,874,210	18,835,352	55,577,463	23,092,142	41.5%	H
1971	13,340,143	20,347,170	60,038,383	55,893,676	93.1%	H
1972	18,906,678	24,314,307	71,744,212	8,704,522	12.1%	
1973	21,737,541	23,257,532	68,625,987	3,837,493	5.6%	
1974	22,348,193	22,844,661	67,407,729	2,193,087	3.3%	
1975	24,396,629	24,958,305	73,644,457	3,943,412	5.4%	
1976	26,795,934	24,109,943	71,141,196	2,218,115	3.1%	
1977	30,910,821	27,119,226	80,020,685	1,898,346	2.4%	
1978	32,709,599	26,415,338	77,943,723	2,535,872	3.3%	
1979	31,306,685	24,514,306	72,334,349	4,535,147	6.3%	
1980	28,751,765	22,607,257	66,707,221	38,431,071	57.6%	H
1981	24,129,384	21,398,588	63,140,802	4,272,728	6.8%	
1982	18,505,004	17,523,231	51,705,788		3.4%	
1983	12,680,397	13,262,706	39,745,107		310.1%	H
1984	12,736,031	14,992,627	39,593,711		10.4%	
1985	15,169,575	16,422,895	51,873,955		3.8%	
1986	21,130,682	17,090,896	49,202,861		9.6%	H
1987	31,114,529	26,771,157	74,156,237		2.0%	
1988	25,065,531	24,117,319	71,028,743		8.9%	
1989	24,167,085	27,085,314	79,171,107		5.8%	H
1990	19,677,404	23,041,233	71,977,927		80.4%	H
1991	21,794,680	25,534,881	75,570,654		64.9%	
1992	23,737,753	26,950,473	81,019,484		1.5%	
1993	21,990,182		63,973,371		5.8%	
1994	16,604,950		49,001,208		11.3%	
1995	32,374,229		95,536,350		24.5%	
1996	55,367,089		163,388,280		2.7%	
1997	53,196,024		156,981,467		4.1%	
1998	53,986,058		160,290,103		15.5%	
1999	52,435,243		156,871,061		9.6%	H
2000	41,739,697		122,437,527		9.0%	
2001	42,330,042		121,250,199		6.1%	
2002	69,156,402		193,901,900		13.3%	
2003	78,368,305		213,267,532		27.1%	H
2004	112,957,791		297,897,666		2.0%	
2005	119,598,806		303,997,530		199.4%	H
2006	148,019,940		357,338,571		2.1%	
2007	186,853,098		422,852,057		3.4%	H
2008	180,008,011		396,186,209		441.8%	H
2009	193,672,354		413,482,415		2.3%	
2010	201,245,742		425,628,955		5.3%	
2011	199,106,765		419,864,189		13.1%	
2012	230,408,157		478,043,722		14.5%	
2013	254,871,359		526,851,170		5.6%	
2014	264,464,447		551,363,808		1.2%	
2015	238,281,256		500,754,078		13.2%	
Total / Average	3,359,022,200		8,104,531,150		34.2%	
Average of Non-Hurricane Years					8.7%	
Average of Non-Hurricane Years Excluding 1991 Selected					7.0%	
					7.9%	

Notes: (2) Provided by TDI. 1970 - 1995 are year ending 9/30/xx as of Evaluated as of; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
(3) Provided by TDI (1992 MR = 1992 manual rates)
(4) 1983 - 2015: Sum of Exhibit 6, Sheet 4 - Sheet 7. (5): 1970 - 1982: (3) * 2.951
(5) Provided by TDI. 1982 - 1995 are year ending CAY Ending as of Evaluated as of; 1997 - 2015 are year ending 12/31/xx as of 12/31/15
(6) 1983 - 2015: Exhibit 6, Sheet 3; 1970 - 1982: (5) / (4)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Industry Experience -- Commercial Extended Coverage

Accident Year	Loss Ratios by Territory / Tier				Weighted Loss Ratio
	Territory 8	Territory 9	Territory 10	Tier 2	
(1)	(2)	(3)	(4)	(5)	(6)
1983	922.5%	2.4%	46.4%	154.6%	310.1%
1984	7.9%	3.2%	14.4%	14.8%	10.4%
1985	3.8%	5.5%	3.1%	8.3%	3.8%
1986	3.0%	1.4%	16.5%	13.0%	9.6%
1987	0.5%	1.9%	2.9%	3.1%	2.0%
1988	12.0%	2.9%	9.1%	5.0%	8.9%
1989	14.0%	1.9%	2.1%	5.7%	5.8%
1990	247.3%	2.5%	7.2%	7.1%	80.4%
1991	22.3%	19.4%	108.1%	4.8%	64.9%
1992	0.8%	1.1%	2.0%	4.0%	1.5%
1993	14.2%	1.8%	2.0%	5.9%	5.8%
1994	0.3%	3.9%	20.6%	8.3%	11.3%
1995	8.1%	10.8%	39.4%	21.6%	24.5%
1996	1.5%	3.0%	3.3%	7.0%	2.7%
1997	5.5%	2.1%	3.8%	9.5%	4.1%
1998	21.7%	14.5%	12.1%	9.6%	15.5%
1999	2.8%	13.3%	12.4%	9.7%	9.6%
2000	2.2%	2.1%	14.5%	61.0%	9.0%
2001	7.4%	3.3%	5.9%	28.0%	6.1%
2002	12.3%	32.3%	7.3%	9.0%	13.3%
2003	2.5%	8.5%	48.6%	27.0%	27.1%
2004	3.0%	0.6%	1.9%	2.5%	2.0%
2005	69.9%	1.6%	351.3%	36.5%	199.4%
2006	2.4%	1.0%	2.3%	3.9%	2.1%
2007	1.7%	1.1%	5.1%	6.0%	3.4%
2008	735.4%	33.9%	408.3%	277.4%	441.8%
2009	2.7%	4.1%	1.3%	5.3%	2.3%
2010	1.6%	4.0%	8.0%	1.6%	5.3%
2011	4.1%	26.1%	14.1%	8.5%	13.1%
2012	16.1%	20.4%	11.7%	4.7%	14.5%
2013	14.5%	3.5%	1.0%	2.8%	5.6%
2014	0.7%	3.1%	0.8%	1.3%	1.2%
2015	13.8%	3.3%	16.4%	4.0%	13.2%
Average	66.0%	7.3%	36.5%	23.4%	40.3%

TWIA 2015 Written Premium by Territory / Tier

	Territory 8	Territory 9	Territory 10	Tier 2	Total
(7) Amount	124,989,045	71,387,041	204,336,580	4,426,182	405,138,848
(8) % Share	30.85%	17.62%	50.44%	1.09%	100.00%

Notes:

- (2) Exhibit 6, Sheet 4
- (3) Exhibit 6, Sheet 5
- (4) Exhibit 6, Sheet 6
- (5) Exhibit 6, Sheet 7
- (6) = Weighted average of (2) to (5), using (8)
- (7) Provided by TWIA
- (8) = (7) / (7) Total

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review

Industry Experience -- Commercial Extended Coverage
 Tier 1 -- Territory 8 (Galveston County)

Accident Year	Earned Premium	Earned Premium at 1992 MR	TWIA Factor to Current Rate Level	Earned Premium at Current Rates	Incurred Loss	Incurred Loss Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1983	913,865	968,224	2.951	2,857,229	26,357,425	922.5%
1984	1,195,339	1,366,667	2.951	4,033,034	318,455	7.9%
1985	2,581,481	2,777,593	2.951	8,196,677	314,878	3.8%
1986	3,013,362	2,349,181	2.951	6,932,433	211,282	3.0%
1987	3,004,153	2,585,122	2.951	7,628,695	37,480	0.5%
1988	2,905,355	2,728,206	2.951	8,050,936	969,836	12.0%
1989	2,825,114	3,015,974	2.951	8,900,139	1,244,199	14.0%
1990	2,303,321	2,474,141	2.951	7,301,190	18,053,460	247.3%
1991	2,203,500	2,080,579	2.951	6,139,789	1,371,244	22.3%
1992	2,352,391	2,012,473	2.951	5,938,808	46,331	0.8%
1993	2,406,016		2.951	7,100,153	1,005,945	14.2%
1994	2,807,090		2.951	8,283,723	28,034	0.3%
1995	2,645,757		2.951	7,807,629	635,625	8.1%
1996	5,519,716		2.951	16,288,682	249,644	1.5%
1997	5,461,636		2.951	16,117,288	886,485	5.5%
1998	6,133,105		2.996	18,374,783	3,994,564	21.7%
1999	6,706,028		3.042	20,399,737	575,316	2.8%
2000	4,997,201		2.911	14,546,852	320,131	2.2%
2001	4,785,262		2.736	13,092,477	962,576	7.4%
2002	8,206,069		2.618	21,483,489	2,632,325	12.3%
2003	8,793,047		2.434	21,402,276	529,845	2.5%
2004	12,425,339		2.213	27,497,275	830,387	3.0%
2005	13,839,253		2.012	27,844,577	19,469,845	69.9%
2006	18,414,310		1.865	34,342,688	812,370	2.4%
2007	24,924,710		1.690	42,122,760	710,669	1.7%
2008	24,990,161		1.597	39,909,287	293,512,131	735.4%
2009	29,437,532		1.454	42,802,172	1,143,669	2.7%
2010	31,795,094		1.340	42,605,426	669,882	1.6%
2011	31,626,679		1.307	41,336,069	1,675,764	4.1%
2012	36,045,420		1.245	44,876,548	7,209,842	16.1%
2013	39,176,542		1.186	46,463,379	6,722,296	14.5%
2014	39,752,603		1.129	44,880,689	319,974	0.7%
2015	37,568,294		1.076	40,423,484	5,567,266	13.8%
Total	421,754,745			705,980,373	399,389,175	56.6%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/16 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 100.0% of industry data in Tier 1 -- Territory 8
- (5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2015
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
- (7) = (6) / (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Industry Experience -- Commercial Extended Coverage
Tier 1 -- Territory 9 (Nueces County)

Accident Year	Earned Premium	Earned Premium at 1992 MR	TWIA Factor to Current Rate Level	Earned Premium at Current Rates	Incurred Loss	Incurred Loss Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1983	745,985	1,333,262	2.951	3,934,456	96,051	2.4%
1984	558,639	820,826	2.951	2,422,258	76,481	3.2%
1985	1,235,059	652,809	2.951	1,926,439	106,148	5.5%
1986	2,228,911	1,383,103	2.951	4,081,537	56,387	1.4%
1987	2,381,538	1,849,840	2.951	5,458,878	105,275	1.9%
1988	1,796,653	2,086,940	2.951	6,158,560	181,414	2.9%
1989	1,632,453	1,719,227	2.951	5,073,439	98,116	1.9%
1990	1,429,526	1,826,430	2.951	5,389,795	135,678	2.5%
1991	1,390,109	1,769,972	2.951	5,223,187	1,013,636	19.4%
1992	1,571,433	1,555,310	2.951	4,589,720	49,512	1.1%
1993	1,587,772	1,629,721	2.951	4,809,307	86,000	1.8%
1994	2,203,514		2.951	6,502,570	254,088	3.9%
1995	2,669,951		2.951	7,879,025	854,753	10.8%
1996	5,639,923		2.951	16,643,413	502,177	3.0%
1997	3,183,758		2.951	9,395,270	199,390	2.1%
1998	3,613,310		2.989	10,800,184	1,561,275	14.5%
1999	6,808,428		3.028	20,615,920	2,735,082	13.3%
2000	5,167,158		2.917	15,072,600	317,804	2.1%
2001	4,763,324		2.769	13,189,644	431,244	3.3%
2002	8,479,915		2.669	22,632,893	7,300,265	32.3%
2003	9,934,549		2.513	24,965,522	2,122,879	8.5%
2004	14,597,450		2.326	33,953,669	212,644	0.6%
2005	16,137,249		2.156	34,791,909	566,758	1.6%
2006	21,249,313		2.032	43,178,604	434,362	1.0%
2007	27,763,251		1.884	52,305,965	569,351	1.1%
2008	28,041,080		1.805	50,614,149	17,167,413	33.9%
2009	30,004,192		1.684	50,527,059	2,093,422	4.1%
2010	28,454,807		1.588	45,186,234	1,793,326	4.0%
2011	26,035,911		1.560	40,616,021	10,619,019	26.1%
2012	27,729,785		1.508	41,816,516	8,517,832	20.4%
2013	29,337,980		1.457	42,745,437	1,479,569	3.5%
2014	29,174,946		1.410	41,136,674	1,255,032	3.1%
2015	26,854,047		1.364	36,628,920	1,205,996	3.3%
Total	374,401,919			710,265,774	64,198,379	9.0%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/16 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 84.6% of industry data in Tier 1 -- Territory 9
- (5) = (3) * (4) for 1983 - 1993; (2) * (4) for 1994 - 2015
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
- (7) = (6) / (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Industry Experience -- Commercial Extended Coverage
Tier 1 -- Territory 10 (Other Tier 1)

Accident Year	Earned Premium	Earned Premium at 1992 MR	TWIA Factor to Current Rate Level	Earned Premium at Current Rates	Incurred Loss	Incurred Loss Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1983	3,769,988	3,832,674	2.951	11,310,221	5,242,728	46.4%
1984	4,835,650	4,139,464	2.951	12,215,558	1,759,233	14.4%
1985	3,637,366	5,883,059	2.951	17,360,907	534,724	3.1%
1986	4,787,352	3,997,227	2.951	11,795,817	1,943,819	16.5%
1987	5,996,981	3,948,102	2.951	11,650,849	338,938	2.9%
1988	5,872,305	5,352,970	2.951	15,796,614	1,442,599	9.1%
1989	5,125,436	5,768,621	2.951	17,023,201	349,413	2.1%
1990	3,842,130	5,918,163	2.951	17,464,499	1,263,817	7.2%
1991	4,253,902	4,624,825	2.951	13,647,859	14,752,702	108.1%
1992	4,034,147	4,765,878	2.951	14,064,106	276,158	2.0%
1993	4,540,606	4,187,015	2.951	12,355,881	245,603	2.0%
1994	5,145,260		2.951	15,183,662	3,130,886	20.6%
1995	9,324,050		2.951	27,515,272	10,852,486	39.4%
1996	15,331,047		2.951	45,241,920	1,478,175	3.3%
1997	17,116,368		2.951	50,510,402	1,911,482	3.8%
1998	17,623,413		2.983	52,570,641	6,340,723	12.1%
1999	15,019,386		3.016	45,298,468	5,614,569	12.4%
2000	11,756,138		2.922	34,351,435	4,969,254	14.5%
2001	11,140,104		2.796	31,147,731	1,824,700	5.9%
2002	20,528,832		2.711	55,653,664	4,053,342	7.3%
2003	23,885,668		2.579	61,601,138	29,908,218	48.6%
2004	31,412,192		2.419	75,986,092	1,462,655	1.9%
2005	34,104,704		2.274	77,554,097	272,418,664	351.3%
2006	46,246,638		2.169	100,308,958	2,315,133	2.3%
2007	71,961,076		2.043	147,016,478	7,496,262	5.1%
2008	66,671,671		1.976	131,743,222	537,914,237	408.3%
2009	67,158,648		1.873	125,788,148	1,683,004	1.3%
2010	66,224,925		1.791	118,608,841	9,460,349	8.0%
2011	64,946,050		1.767	114,759,670	16,146,914	14.1%
2012	71,373,347		1.723	122,976,277	14,363,471	11.7%
2013	77,216,073		1.680	129,723,003	1,232,662	1.0%
2014	72,607,944		1.639	119,004,420	1,005,779	0.8%
2015	64,604,103		1.600	103,366,565	16,990,655	16.4%
Total	932,093,500			1,940,595,616	980,723,354	50.5%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2011 are year ending 12/31/xx as of 12/31/15
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/16 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 72.0% of industry data in Tier 1 -- Territory 10
- (5) = (3) * (4) for 1983 - 1993; (2) * (4) for 1994 - 2015
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
- (7) = (6) / (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Industry Experience -- Commercial Extended Coverage
Tier 2 (Territories 1 and 11)

AY Ending	Earned Premium	Earned Premium at 1992 MR	TWIA Factor to Current Rate Level	Earned Premium at Current Rates	Incurred Loss	Incurred Loss Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1983	7,250,559	7,334,192	2.951	21,643,201	33,451,768	154.6%
1984	6,146,403	7,090,092	2.951	20,922,861	3,096,573	14.8%
1985	7,715,669	8,264,972	2.951	24,389,932	2,019,280	8.3%
1986	11,101,057	8,943,773	2.951	26,393,074	3,439,343	13.0%
1987	19,731,857	16,746,125	2.951	49,417,815	1,552,595	3.1%
1988	14,491,218	13,901,265	2.951	41,022,633	2,041,063	5.0%
1989	14,584,082	16,324,747	2.951	48,174,328	2,746,147	5.7%
1990	12,102,427	14,172,295	2.951	41,822,443	2,967,816	7.1%
1991	13,947,169	17,133,114	2.951	50,559,819	2,440,246	4.8%
1992	15,779,782	19,121,264	2.951	56,426,850	2,232,412	4.0%
1993	13,455,788		2.951	39,708,030	2,357,383	5.9%
1994	6,449,086		2.951	19,031,253	1,579,205	8.3%
1995	17,734,471		2.951	52,334,424	11,314,057	21.6%
1996	28,876,403		2.951	85,214,265	5,938,855	7.0%
1997	27,434,262		2.951	80,958,507	7,691,121	9.5%
1998	26,616,230		2.951	78,544,495	7,574,576	9.6%
1999	23,901,401		2.952	70,556,936	6,821,707	9.7%
2000	19,819,200		2.950	58,466,640	35,670,537	61.0%
2001	21,641,352		2.949	63,820,347	17,852,673	28.0%
2002	31,941,586		2.947	94,131,854	8,461,924	9.0%
2003	35,755,041		2.945	105,298,596	28,411,179	27.0%
2004	54,522,810		2.943	160,460,630	3,982,223	2.5%
2005	55,697,704		2.941	163,806,947	59,821,556	36.5%
2006	61,057,252		2.940	179,508,321	6,946,289	3.9%
2007	61,745,015		2.938	181,406,854	10,823,308	6.0%
2008	59,216,735		2.937	173,919,551	482,434,926	277.4%
2009	66,223,181		2.935	194,365,036	10,217,378	5.3%
2010	74,719,991		2.934	219,228,454	3,610,046	1.6%
2011	76,057,406		2.934	223,152,429	18,872,574	8.5%
2012	91,501,664		2.933	268,374,381	12,483,052	4.7%
2013	104,984,436		2.933	307,919,351	8,599,204	2.8%
2014	118,124,838		2.932	346,342,025	4,608,265	1.3%
2015	109,254,812		2.932	320,335,109	12,892,907	4.0%
Total	984,565,659			3,867,657,392	806,420,956	20.9%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/16 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 1.0% of industry data in Tier 2
- (5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2015
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2015 are year ending 12/31/xx as of 12/31/15
- (7) = (6) / (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Hurricane Loss Ratio -- AIR Model

County	TWIA Insured Values (000s) as of 12/31/15	Modeled Loss Cost	Expected Annual Hurricane Loss
(1)	(2)	(3)	(4)
Aransas	334,706	3.960	1,325,436
Brazoria	1,152,624	2.802	3,229,652
Calhoun	169,841	3.028	514,279
Cameron	1,512,288	2.845	4,302,459
Chambers	95,299	2.374	226,240
Galveston	3,107,802	7.698	23,923,860
Harris	108,732	4.742	515,607
Jefferson	828,453	2.645	2,191,258
Kenedy	694	1.157	803
Kleberg	69,737	0.769	53,628
Matagorda	154,833	2.803	433,997
Nueces	2,488,091	3.503	8,715,783
Refugio	19,600	1.742	34,143
San Patricio	283,959	2.363	670,995
Willacy	26,613	1.887	50,219
Total	10,353,272	4.461	46,188,359
(5) 2015 Earned Premium at Present Rates			109,483,988
(6) Indicated Hurricane Loss Ratio			42.2%

Notes:

- (2) Provided by TWIA
- (3) Exhibit 7, Sheet 2
- (4) = (2) * (3)
- (5) Exhibit 10, Sheet 1
- (6) = (4) Total / (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
AIR Simulated Hurricane Results

County	TWIA Insured Values (000s) as of 12/31/15	Average Annual Modeled Loss	Provision for Storm Surge	Modeled Loss Cost
(1)	(2)	(3)	(4)	(5)
Aransas	334,706	1,320,212	1.004	3.960
Brazoria	1,152,624	3,216,398	1.004	2.802
Calhoun	169,841	512,295	1.004	3.028
Cameron	1,512,288	4,285,632	1.004	2.845
Chambers	95,299	225,334	1.004	2.374
Galveston	3,107,802	23,829,637	1.004	7.698
Harris	108,732	513,531	1.004	4.742
Jefferson	828,453	2,182,713	1.004	2.645
Kenedy	694	800	1.004	1.157
Kleberg	69,737	53,410	1.004	0.769
Matagorda	154,833	432,330	1.004	2.803
Nueces	2,488,091	8,679,918	1.004	3.503
Refugio	19,600	34,002	1.004	1.742
San Patricio	283,959	668,230	1.004	2.363
Willacy	26,613	50,031	1.004	1.887
Total	10,353,272	46,004,473	1.004	4.461

Notes:

- (2) Provided by TWIA and Geo-coded by AIR
- (3) Provided by AIR
- (4) = 10% of modeled storm surge increase, estimated to be 4.0%
- (5) = (3) / (2) * (4)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Hurricane Loss Ratio -- RMS Model

County	TWIA Insured Values (000s) as of 12/31/15	Modeled Loss Cost	Expected Annual Hurricane Loss
(1)	(2)	(3)	(4)
Aransas	329,304	4.175	1,374,844
Brazoria	1,143,500	3.410	3,899,335
Calhoun	170,171	4.810	818,523
Cameron	1,512,288	4.378	6,620,797
Chambers	93,101	3.210	298,854
Galveston	3,116,926	6.125	19,091,172
Harris	110,930	4.447	493,306
Jefferson	828,452	3.051	2,527,607
Kenedy	694	2.175	1,509
Kleberg	69,737	1.813	126,433
Matagorda	154,503	3.892	601,326
Nueces	2,486,658	3.923	9,755,159
Refugio	19,600	3.197	62,661
San Patricio	290,794	3.132	910,767
Willacy	26,613	3.096	82,394
Total	10,353,271	4.507	46,664,687
(5) 2015 Earned Premium at Present Rates			109,483,988
(6) Indicated Hurricane Loss Ratio			42.6%

Notes:

- (2) Provided by TWIA
- (3) Exhibit 8, Sheet 2
- (4) = (2) * (3)
- (5) Exhibit 10, Sheet 1
- (6) = (4) Total / (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
RMS Simulated Hurricane Results

County	TWIA Insured Values (000s) as of 12/31/15	Average Annual Modeled Loss	Provision for Storm Surge	Modeled Loss Cost
(1)	(2)	(3)	(4)	(5)
Aransas	329,304	1,350,529	1.018	4.175
Brazoria	1,143,500	3,830,411	1.018	3.410
Calhoun	170,171	804,070	1.018	4.810
Cameron	1,512,288	6,504,213	1.018	4.378
Chambers	93,101	293,571	1.018	3.210
Galveston	3,116,926	18,753,350	1.018	6.125
Harris	110,930	484,591	1.018	4.447
Jefferson	828,452	2,483,247	1.018	3.051
Kenedy	694	1,483	1.018	2.175
Kleberg	69,737	124,172	1.018	1.813
Matagorda	154,503	590,618	1.018	3.892
Nueces	2,486,658	9,583,400	1.018	3.923
Refugio	19,600	61,549	1.018	3.197
San Patricio	290,794	894,683	1.018	3.132
Willacy	26,613	80,947	1.018	3.096
Total	10,353,271	45,840,834	1.018	4.507

Notes:

- (2) Provided by TWIA and Geo-coded by RMS
- (3) Provided by RMS
- (4) = 10% of modeled storm surge increase, estimated to be 18.0%
- (5) = (3) / (2) * (4)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Texas Hurricanes 1850 - 2015

<u>Landfall</u>			<u>Landfall</u>		
Year	Month	Name	Year	Month	Name
(1)	(2)		(1)	(2)	
1851	Jun		1929	Jun	
1854	Jun		1932	Aug	"Freeport"
1854	Sep	"Matagorda"	1933	Aug	
1865	Sep	"Sabine River-Lake Calcasieu"	1933	Sep	
1866	Jul		1934	Jul	
1867	Oct	"Galveston"	1936	Jun	
1869	Aug	"Lower Texas Coast"	1940	Aug	
1875	Sep		1941	Sep	
1879	Aug		1942	Aug	
1880	Aug		1942	Aug	
1882	Sep		1943	Jul	
1886	Jun		1945	Aug	
1886	Aug	"Indianola"	1947	Aug	
1886	Sep		1949	Oct	
1886	Oct		1957	Jun	Audrey
1887	Sep		1959	Jul	Debra
1888	Jun		1961	Sep	Carla
1891	Jul		1963	Sep	Cindy
1895	Aug		1967	Sep	Beulah
1897	Sep		1970	Aug	Celia
1900	Sep	"Galveston"	1971	Sep	Fern
1909	Jun		1980	Aug	Allen
1909	Jul	"Velasco"	1983	Aug	Alicia
1909	Aug		1986	Jun	Bonnie
1910	Sep		1989	Aug	Chantal
1912	Oct		1989	Oct	Jerry
1913	Jun		1999	Aug	Bret
1915	Aug	"Galveston"	2003	Jul	Claudette
1916	Aug		2005	Sep	Rita
1919	Sep		2007	Sep	Humberto
1921	Jun		2008	Jul	Dolly
			2008	Sep	Ike

Frequency	Date Period	Hurricanes	Period	Annual Frequency
46.3-Year	10/1/1969 - 12/31/2015	13	46.3	0.281
165-Year	1/1/1851 - 12/31/2015	63	165	0.382

Notes:

(1), (2) from NOAA Technical Memorandum NWS TPC-5, updated with actual experience through 2015

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Calculation of Earned Premium at Present Rate Level

Year	TWIA Written Premium	Factor to Current Rate Level	Written Premium at Current Rate Level	Earned Premium at Current Rate Level
(1)	(2)	(3)	(4)	(5)
1993	9,185,541	2.950	27,097,346	27,097,346
1994	10,672,677	2.950	31,484,397	29,290,872
1995	12,865,905	2.950	37,954,420	34,719,409
1996	15,640,660	2.950	46,139,947	42,047,184
1997	16,536,186	2.950	48,781,749	47,460,848
1998	16,558,977	3.041	50,355,849	49,568,799
1999	17,394,142	3.041	52,895,586	51,625,718
2000	17,332,561	2.791	48,375,178	50,635,382
2001	17,544,251	2.683	47,071,225	47,723,202
2002	24,013,525	2.556	61,378,570	54,224,898
2003	29,220,514	2.324	67,908,475	64,643,523
2004	31,009,323	2.113	65,522,699	66,715,587
2005	35,740,174	1.920	68,621,134	67,071,917
2006	76,847,840	1.781	136,866,003	102,743,569
2007	110,951,718	1.633	181,184,155	159,025,079
2008	98,037,185	1.556	152,545,860	166,865,008
2009	111,269,480	1.355	150,770,145	151,658,003
2010	102,171,553	1.340	136,909,881	143,840,013
2011	100,011,848	1.276	127,615,118	132,262,500
2012	110,524,395	1.216	134,397,664	131,006,391
2013	113,035,972	1.158	130,895,656	132,646,660
2014	104,642,691	1.102	115,316,245	123,105,951
2015	98,715,934	1.050	103,651,731	109,483,988
Total	1,279,923,052		2,023,739,033	1,985,461,847

Notes:

- (2) Provided by TWIA, 1992 reflects adjustment for rate change applied to in-force policies
- (3) Exhibit 10, Sheet 2
- (4) = (2) * (3) (calculated on a monthly basis)
- (5) Calculated from (4), using annual uniform earning assumption for 2001 and prior and monthly for 2002 and after

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Calculation of On-Level Premium Factors

Year	Rate Level in Effect				Cumulative Rate Level			# Months				Average Rate Level	Factor to Current Rate Level	
	Applicable Rates				B.O.Y.	(6)	(7)	E.O.Y.	B.O.Y.	(10)	(11)			
	B.O.Y.	(2)	(3)	E.O.Y.										(8)
(1)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1980	Prior			8/1/1980	1.000			1.175	7.0			5.0	1.073	4.416
1981	8/1/1980			9/1/1981	1.175			1.132	8.0			4.0	1.161	4.081
1982	9/1/1981			9/1/1982	1.132			1.428	8.0			4.0	1.231	3.849
1983	9/1/1982			10/10/1983	1.428			1.514	9.3			2.7	1.447	3.275
1984	10/10/1983			10/10/1983	1.514			1.514	12.0			0.0	1.514	3.130
1985	10/10/1983	3/1/1985	3/15/1985	11/15/1985	1.514	1.892	2.428	2.651	2.0	0.5	8.0	1.5	2.281	2.077
1986	11/15/1985			11/15/1985	2.651			2.651	12.0			0.0	2.651	1.787
1987	11/15/1985			7/1/1987	2.651			2.407	6.0			6.0	2.529	1.874
1988	7/1/1987			11/1/1988	2.407			2.075	10.0			2.0	2.352	2.015
1989	11/1/1988			11/1/1988	2.075			2.075	12.0			0.0	2.075	2.284
1990	11/1/1988			3/1/1990	2.075			2.104	2.0			10.0	2.099	2.257
1991	3/1/1990			4/1/1991	2.104			2.083	3.0			9.0	2.088	2.269
1992	1/1/1992			1/1/1992	1.606			1.606	12.0			0.0	1.606	2.950
1993	1/1/1992			10/1/1993	1.606			1.606	9.0			3.0	1.606	2.950
1994	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	2.950
1995	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	2.950
1996	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	2.950
1997	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	2.950
1998	1/1/1998			1/1/1998	1.558			1.558	12.0			0.0	1.558	3.041
1999	1/1/1998			1/1/1998	1.558			1.558	12.0			0.0	1.558	3.041
2000	1/1/2000			1/1/2000	1.698			1.698	12.0			0.0	1.698	2.791
2001	1/1/2001			1/1/2001	1.766			1.766	12.0			0.0	1.766	2.683
2002	1/1/2002			1/1/2002	1.854			1.854	12.0			0.0	1.854	2.556
2003	1/1/2003			1/1/2003	2.039			2.039	12.0			0.0	2.039	2.324
2004	1/1/2004			1/1/2004	2.243			2.243	12.0			0.0	2.243	2.113
2005	1/1/2005			1/1/2005	2.468			2.468	12.0			0.0	2.468	1.920
2006	1/1/2006			9/1/2006	2.591			2.798	8.0			4.0	2.660	1.781
2007	1/1/2007			1/1/2007	2.902			2.902	12.0			0.0	2.902	1.633
2008	1/1/2007			2/1/2008	2.902			3.059	1.0			11.0	3.046	1.556
2009	2/1/2008			2/1/2009	3.059			3.536	1.0			11.0	3.496	1.355
2010	2/1/2009			2/1/2009	3.536			3.536	12.0			0.0	3.536	1.340
2011	1/1/2011			1/1/2011	3.713			3.713	12.0			0.0	3.713	1.276
2012	1/1/2012			1/1/2012	3.898			3.898	12.0			0.0	3.898	1.216
2013	1/1/2013			1/1/2013	4.093			4.093	12.0			0.0	4.093	1.158
2014	1/1/2014			1/1/2014	4.298			4.298	12.0			0.0	4.298	1.102
2015	1/1/2015			1/1/2016	4.513			4.513	12.0			0.0	4.513	1.050
2016	1/1/2016			1/1/2017	4.738			4.738	12.0			0.0	4.738	1.000
Current				1/1/2015				4.738					4.738	1.000

Notes:

- (1) - (4) Rates in effect and beginning and end of year (B.O.Y. and E.O.Y.)
For each year except 1985, 2006, and 2008 the B.O.Y. and E.O.Y. rates are the only rates applicable
For 1985, there were two additional rate changes
For 2006, there was one additional rate change
For 2008, the rate change took effect mid-year
- (5) - (8) Based on Exhibit 10, Sheet 3
- (9) - (12) Number of months that each of the rates were effective
- (13) = Weighted average of (5) - (8) using (9) - (12) as weights
- (14) = Current (13) / (13)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
History of Rate Level Changes

Effective Date	Rate Change	Cumulative Rate Level
(1)	(2)	(3)
Prior		1.000
8/1/80	17.5%	1.175
9/1/81	-3.7%	1.132
9/1/82	26.2%	1.428
10/10/83	6.0%	1.514
3/1/85	25.0%	1.892
3/15/85	28.3%	2.428
11/15/85	9.2%	2.651
7/1/87	-9.2%	2.407
11/1/88	-13.8%	2.075
3/1/90	1.4%	2.104
4/1/91	-1.0%	2.083
1/1/92	-22.9%	1.606
10/1/93	0.0%	1.606
1/1/98	-3.0%	1.558
1/1/00	9.0%	1.698
1/1/01	4.0%	1.766
1/1/02	5.0%	1.854
1/1/03	10.0%	2.039
1/1/04	10.0%	2.243
1/1/05	10.0%	2.468
1/1/06	5.0%	2.591
9/1/06	8.0%	2.798
1/1/07	3.7%	2.902
2/1/08	5.4%	3.059
2/1/09	15.6%	3.536
1/1/11	5.0%	3.713
1/1/12	5.0%	3.898
1/1/13	5.0%	4.093
1/1/14	5.0%	4.298
1/1/15	5.0%	4.513
1/1/16	5.0%	4.738

Notes:

- (2) Provided by TWIA, excludes 1/1/92 refund on in-force policies
- (3) = Cumulation of (2)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Fixed Expenses and Variable Permissible Loss & LAE Ratios

Expense Category	2013	2014	2015	Selected
(1) Direct Written Premium	\$472,739,474	\$494,036,010	\$503,824,316	
(2) Direct Earned Premium	456,629,705	484,048,868	501,721,842	
(3) Commission				
\$ Amount	75,609,038	79,013,534	80,599,761	
% of DWP	16.0%	16.0%	16.0%	16.0%
(4) Other Acquisition				
\$ Amount	\$0	\$0	\$0	
% of DWP	0.0%	0.0%	0.0%	0.0%
(5) General Expense				
Unadjusted \$ Amount	\$24,108,302	\$26,497,842	\$27,800,836	
Adjustments				
Contribution to Statutory Fund	0	0	0	
Adjusted \$ Amount	24,108,302	26,497,842	27,800,836	
% of DWP	5.1%	5.4%	5.5%	5.3%
(6) Taxes, Licenses & Fees				
\$ Amount	\$9,329,687	\$9,640,039	\$9,828,083	
% of DWP	2.0%	2.0%	2.0%	2.0%
(7) Reinsurance Expense				16.2%
(8) Total Fixed Expenses				21.5%
(9) Total Variable Expenses				18.0%
(10) CRTF Contribution				5.2%
Class 1 Public Security Repayment				14.8%
Total Funding Contribution				20.0%
(11) Variable Permissible Loss & LAE Ratio				62.0%

Notes:

- (1) - (6) From TWIA's Statutory Annual Statements and Insurance Expense Exhibits
- (7) Exhibit 11, Sheet 2
- (8) = (5) + (7)
- (9) = (3) + (4) + (6)
- (10) CRTF contribution selected judgmentally; Class 1 repayment based on projected \$80 million in debt service
- (11) = 100% - (9) - (10)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Development of Reinsurer Expense
Using Average of AIR and RMS Hurricane Models

(1) 2016 - 2017 Reinsurance Premium	121,302,185
(2a) Average Annual Loss by Reinsurance Layer (AIR) 100% of \$2200M XS \$2700M	34,810,000
Total	34,810,000
(2b) Average Annual Loss by Reinsurance Layer (RMS) 100% of \$2200M XS \$2700M	26,380,000
Total	26,380,000
(2c) Selected Total Average Annual Loss	30,595,000
(3) Annual Exposure Growth	0.0%
(4) Prospective Average Annual Loss	30,595,000
(5) Net Cost of Reinsurance	87,647,685
(6) TWIA 2015 Earned Premium at Present Rates	544,040,899
(7) 2016 - 2017 TWIA Prospective Eamed Premium at Present Rates	542,277,861
(8) Indicated Reinsurance Expense %	16.2%

Notes:

- (1) From TWIA reinsurance contract effective 6/1/2016 through 5/31/2017
- (2a) Provided by Guy Carpenter, based on AIR model using TWIA exposures as of 12/31/2015 and adjusted for ALAE
- (2b) Provided by Guy Carpenter, based on RMS model using TWIA exposures as of 12/31/2015 and adjusted for ALAE
- (2c) Selected equal to the average of the modeled average annual losses
- (3) Selected based on projections communicated to reinsurers
- (4) = Sum of (2a) * [(3) ^ 0.667]
- (5) = (1) - (4)
- (6) = Commercial Exhibit 10, Sheet 1 + Residential Exhibit 10, Sheet 2, calendar year ending 12/31/xx
- (7) = (6) adjusted for premium trend * [(3) ^ 1.167] (projected premium growth from 7/1/2015 to 9/1/2016)
- (8) = (5) / (7)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Reconciliation of Paid Loss Data to Schedule P

Accident Year	TWIA Provided Paid Loss			Schedule P	
	Commercial & Farm	Residential	Total	Direct & Assumed Paid Loss	Difference
(1)	(2)	(3)	(4)	(5)	(6)
2006	1,517,386	2,758,503	4,275,889	4,276,000	(111)
2007	5,610,638	10,190,834	15,801,472	15,745,000	56,472
2008	853,657,914	1,708,961,669	2,562,619,583	2,560,582,000	2,037,583
2009	2,553,456	8,457,610	11,011,066	10,381,000	630,066
2010	7,302,457	10,953,110	18,255,567	18,249,000	6,567
2011	19,119,430	76,682,843	95,802,273	95,693,000	109,273
2012	13,284,033	52,195,098	65,479,131	65,428,000	51,131
2013	7,338,329	63,475,089	70,813,418	70,770,000	43,418
2014	874,907	5,957,950	6,832,857	6,837,000	(4,143)
2015	15,922,994	111,174,392	127,097,386	127,230,000	(132,614)
Total	927,181,544	2,050,807,098	2,977,988,642	2,975,191,000	2,797,642

Notes:

- (2), (3) Provided by TWIA, as of 12/31/2015
- (4) = (2) + (3)
- (5) Based on TWIA 2015 Annual Statement
- (6) = (4) - (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Reconciliation of Premium Data to Annual Statement

Calendar Year	TWIA Provided Written Premium			Annual Statement Gross	
	Commercial	Residential	Total	Written Premium	Difference
(1)	(2)	(3)	(4)	(5)	(6)
1993	9,185,541	10,130,170	19,315,711	19,376,959	(61,248)
1994	10,672,677	15,758,330	26,431,007	26,510,501	(79,494)
1995	12,865,905	19,259,265	32,125,170	32,419,287	(294,117)
1996	15,640,660	24,504,127	40,144,787	40,358,575	(213,788)
1997	16,536,186	25,783,455	42,319,641	42,462,844	(143,203)
1998	16,558,977	27,833,800	44,392,777	44,410,914	(18,137)
1999	17,394,142	27,168,992	44,563,134	44,581,218	(18,084)
2000	17,332,561	29,762,296	47,094,857	48,012,426	(917,569)
2001	17,544,251	36,220,623	53,764,874	54,630,727	(865,853)
2002	24,013,525	48,856,422	72,869,947	72,967,831	(97,884)
2003	29,220,514	58,573,191	87,793,705	87,987,279	(193,574)
2004	31,009,323	71,292,702	102,302,025	102,384,351	(82,326)
2005	35,740,174	78,094,458	113,834,632	113,927,701	(93,069)
2006	76,847,840	119,658,576	196,506,416	196,833,235	(326,819)
2007	110,951,718	203,561,196	314,512,914	315,139,307	(626,393)
2008	98,037,185	232,921,259	330,958,444	331,057,645	(99,201)
2009	111,269,480	269,535,987	380,805,467	382,342,402	(1,536,935)
2010	102,171,553	278,117,003	380,288,556	385,549,582	(5,261,026)
2011	100,011,848	307,490,101	407,501,949	403,748,164	3,753,785
2012	110,524,395	335,793,285	446,317,679	443,479,701	2,837,978
2013	113,035,972	360,877,590	473,913,562	472,739,474	1,174,088
2014	104,642,691	389,333,918	493,976,609	494,036,010	(59,401)
2015	98,715,934	407,969,846	506,685,780	503,824,316	2,861,464
Total	1,279,923,052	3,378,496,592	4,658,419,643	4,658,780,449	-360,806

Notes:

- (2), (3) Provided by TWIA, as of 12/31/2015
- (4) = (2) + (3)
- (5) Based on TWIA Annual Statements
- (6) = (4) - (5)

Texas Windstorm Insurance Association
Commercial and Residential Property - Wind & Hail
Rate Level Review
 Analysis of Current and Proposed Net Premium Income

Exhibit 13

Premiums and Rate Components	<u>TWIA Indications at Current / Proposed Rates</u>		
	Commercial	Residential	Total
(1) 2017 Written Premium	107,808,048	401,044,392	508,852,440
(2) 2017 Earned Premium	114,885,402	391,616,050	506,501,453
(3) Non-Hurricane Loss & LAE Ratio	8.7%	13.9%	12.7%
(4) General Expenses	5.3%	5.3%	5.3%
(5) Reinsurance	23.8%	23.8%	23.8%
(6) Commission	16.0%	16.0%	16.0%
(7) Taxes, Licenses, & Fees	2.0%	2.0%	2.0%
(8) Total Non-Catastrophe Expenses	60,813,999	243,480,466	304,294,465
(9) Net Premium Income			202,206,988
<u>Costs for \$500 Million Class 1 Bonds (Issued 2014)</u>			
(10) Net Required Premium			100,380,000
(11) Net Debt Service			80,304,000
<u>Costs as a Percentage of Prospective Earned Premium</u>			
(12) Net Required Premium			19.8%
(13) Net Debt Service			15.9%

Notes:

- (1) from financial projections
- (2) from financial projections
- (3) Exhibit 2, Sheet 1
- (4) Exhibit 11, Sheet 1 (5)
- (5) Exhibit 11, Sheet 1 (7)
- (6) Exhibit 11, Sheet 1 (3)
- (7) Exhibit 11, Sheet 1 (6)
- (8) = (1) * [(4) + (6) + (7)] + (2) * (3)
- (9) = (2) - (8)
- (10) from covenants associated with outstanding pre-event Class 1 public securities
- (11) from covenants associated with outstanding pre-event Class 1 public securities
- (12) = (10) / (2)
- (13) = (11) / (2)

