

**Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
2020 Rate Level Review**

Table of Contents

Tab label	Main Heading	Sub-heading	Exhibit	Sheet
1	Summary of Indicated Rate Change	By Method for Projecting Hurricane Loss & LAE	Exhibit 1	
2.1	Projected Ultimate Non-Hurricane Loss & LAE Ratio		Exhibit 2	Sheet 1
2.2	Projected Ultimate Non-Hurricane Loss		Exhibit 2	Sheet 2
2.3	Summary of TWIA Historical Paid Loss as of 12/31/19		Exhibit 2	Sheet 3
2.4	Calculation of Net Trend Factors		Exhibit 2	Sheet 4
3.1	Paid Loss Development Factors	TWIA Commercial Property Paid Loss	Exhibit 3	Sheet 1
3.2 premium trend	Premium Trend Analysis	TWIA Commercial Earned Premium at Present Rates	Exhibit 3	Sheet 1
3.3a	Loss Trend Analysis	Summary of Indices and Calculation of Prospective Loss Costs	Exhibit 3	Sheet 3a
3.3b	Loss Trend Analysis	Boeckh Commercial Construction Index Trend (Statewide)	Exhibit 3	Sheet 3b
3.3c	Loss Trend Analysis	Boeckh Commercial Construction Index Trend (Coastal)	Exhibit 3	Sheet 3c
3.3d	Loss Trend Analysis	Modified Consumer Price Index - External Trend	Exhibit 3	Sheet 3d
4.1	Development of Non Hurricane LAE factor Using TWIA Commercial + Residential Experience		Exhibit 4	Sheet 1
4.2	Development of Hurricane LAE factor Using TWIA Commercial + Residential Experience		Exhibit 4	Sheet 2
5	Summary of Indicated Hurricane Loss & LAE Ratios		Exhibit 5	
6.1	Industry Experience -- Commercial Extended Coverage	1970 - 2019 -- Hurricane Years Only	Exhibit 6	Sheet 1
6.2 - industry	Industry Experience -- Commercial Extended Coverage	1970 - 2019	Exhibit 6	Sheet 2
6.3	Industry Experience -- Commercial Extended Coverage		Exhibit 6	Sheet 3
6.4	Industry Experience -- Commercial Extended Coverage	Tier 1 -- Territory 8 (Galveston County)	Exhibit 6	Sheet 4
6.5	Industry Experience -- Commercial Extended Coverage	Tier 1 -- Territory 9 (Nueces County)	Exhibit 6	Sheet 5
6.6	Industry Experience -- Commercial Extended Coverage	Tier 1 -- Territory 10 (Other Tier 1)	Exhibit 6	Sheet 6
6.7	Industry Experience -- Commercial Extended Coverage	Tier 2 (Territories 1 and 11)	Exhibit 6	Sheet 7
7	Hurricane Loss Ratio -- AIR Model		Exhibit 7	
8	Hurricane Loss Ratio -- RMS Model		Exhibit 8	
9	Texas Hurricanes 1850 - 2019		Exhibit 9	
10.1	Calculation of TWIA Earned Premium at Present Rate Level	Tier 1 -- Territory 8 (Galveston County)	Exhibit 10	Sheet 1
10.2	Calculation of On-Level Premium Factors		Exhibit 10	Sheet 2
10.3	History of Rate Level Changes		Exhibit 10	Sheet 3
11.1	Fixed Expenses and Permissible Loss & LAE Ratios		Exhibit 11	Sheet 1
11.2	Development of Reinsurer Expense	Using Weighting of 50% AIR and 50% RMS Hurricane Models	Exhibit 11	Sheet 2
12.1	Reconciliation of Paid Loss Data to Schedule P		Exhibit 12	Sheet 1
12.2	Reconciliation of Premium Data to Annual Statement		Exhibit 12	Sheet 2

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

Hurricane Projection Method (1)	Indicated Loss & LAE Ratio			Fixed Expenses (4)	Total (5)	Permissible LLAE Ratio (6)	Indicated Rate Change (7)
	Hurricane (2)	Non-Hurricane (3)					
Using Experience and Models (50%/50%)	50.2%	9.2%	41.6%	101.0%	77.1%	+31%	
Using Actual Industry Experience	50.2%	9.2%	41.6%	101.0%	77.1%	+31%	
Using Hurricane Models (25% AIR, 75% RMS)	50.1%	9.2%	41.6%	101.0%	77.1%	+31%	
AIR Models	60.9%	9.2%	41.6%	111.7%	77.1%	+45%	
RMS Models	46.6%	9.2%	41.6%	97.4%	77.1%	+26%	

Notes:

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

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)
2010	7,478,289	0.276	1.137	10,849,591	151,048,188	7.2%
2011	19,217,587	0.276	1.103	27,047,370	138,891,291	19.5%
2012	14,459,642	0.276	1.087	20,055,697	137,525,969	14.6%
2013	7,351,329	0.276	1.108	10,393,368	139,160,577	7.5%
2014	1,062,619	0.276	1.084	1,469,798	129,234,128	1.1%
2015	19,110,326	0.276	1.063	25,921,017	114,980,596	22.5%
2016	2,671,804	0.276	1.061	3,617,184	100,738,792	3.6%
2017	2,080,162	0.276	1.035	2,747,187	83,489,580	3.3%
2018	205,296	0.276	0.993	260,124	69,991,684	0.4%
2019	1,071,513	0.276	1.022	1,397,330	62,410,281	2.2%
Total	74,708,567			103,758,666	1,127,471,086	9.2%

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)
2010	7,478,289	1.000	7,478,289
2011	19,217,587	1.000	19,217,587
2012	14,459,642	1.000	14,459,642
2013	7,351,329	1.000	7,351,329
2014	1,056,281	1.006	1,062,619
2015	18,644,220	1.025	19,110,326
2016	2,596,505	1.029	2,671,804
2017	1,979,222	1.051	2,080,162
2018	186,803	1.099	205,296
2019	806,862	1.328	1,071,513
Total	73,776,740		74,708,567

Notes:

- (2) Exhibit 2, Sheet 3, as of 12/31/19
- (3) Exhibit 3, Sheet 1
- (4) = (2) * (3)

t2
t2

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

Summary of TWIA Historical Paid Loss as of 12/31/19

Accident Year	Paid Loss Excluding Expense			Total
	Non-Hurricane	Hurricane		
	(1)	(2)	(3)	
2010	7,478,289		0	7,478,289
2011	19,217,587		0	19,217,587
2012	14,459,642		0	14,459,642
2013	7,351,329		0	7,351,329
2014	1,056,281		0	1,056,281
2015	18,644,220		0	18,644,220
2016	2,596,505		0	2,596,505
2017	1,979,222	435,211,700		437,190,922
2018	186,803		0	186,803
2019	806,862		0	806,862
Total	73,776,740	435,211,700		508,988,440

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			
	Written premium Per house year At present rates			
(1)	(2)	(3)	(4)	
		(3) Current Average Earned Date	7/1/2019	
		(4) Current Average Accident Date	7/1/2019	
2011 / 4	4,002.39	(5) Prospective Average Earned / Accident Date	1/1/2022	
2012 / 4	4,097.53	(6) Premium Trend Length	2.500	
2013 / 4	4,252.75	(7) Loss Trend Length	2.500	
2014 / 4	4,282.15	(8) Selected Premium Trend	1.0%	
2015 / 4	4,264.40	(9) Selected Loss Trend	1.9%	
2016 / 4	4,252.60			
2017 / 4	4,215.24			
2018 / 4	4,176.71			
2019 / 4	4,382.63			

Accident Year	Current Premium Trend	Current Loss Trend	Prospective Premium Trend	Prospective Loss Trend	Net Trend Factor
(10)	(11)	(12)	(13)	(14)	(15)
2010	1.095	1.218	1.025	1.048	1.137
2011	1.095	1.181	1.025	1.048	1.103
2012	1.070	1.137	1.025	1.048	1.087
2013	1.031	1.117	1.025	1.048	1.108
2014	1.023	1.085	1.025	1.048	1.084
2015	1.028	1.069	1.025	1.048	1.063
2016	1.031	1.069	1.025	1.048	1.061
2017	1.040	1.053	1.025	1.048	1.035
2018	1.049	1.019	1.025	1.048	0.993
2019	1.000	1.000	1.025	1.048	1.022

Notes:

- (2) Exhibit 3, Sheet 2 (7)
- (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 2019 / 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	<u>Months of Development</u>							
	12 (1)	24 (2)	36 (3)	48 (4)	60 (5)	72 (6)	84 (7)	(8)
2010		4,489	6,162	6,783	7,280	7,280	7,302	7,478
2011		13,360	16,138	18,435	18,758	19,119	19,200	19,218
2012		8,512	11,404	13,135	13,284	13,309	14,460	14,460
2013		6,886	7,243	7,338	7,351	7,351	7,351	7,351
2014		641	875	1,015	1,056	1,056	1,056	
2015		15,923	17,690	17,780	18,644	18,644		
2016		2,055	2,479	2,584	2,597			
2017		1,599	1,963	1,979				
2018		165	187					
2019		807						

Accident Year	<u>Development Factors</u>							
	12 - 24 (1)	24 - 36 (2)	36 - 48 (3)	48 - 60 (4)	60 - 72 (5)	72 - 84 (6)	84 - Ult (7)	(8)
2010		1.373	1.101	1.073	1.000	1.003	1.024	
2011		1.208	1.142	1.018	1.019	1.004	1.001	
2012		1.340	1.152	1.011	1.002	1.086	1.000	
2013		1.052	1.013	1.002	1.000	1.000	1.000	
2014		1.365	1.160	1.040	1.000	1.000		
2015		1.111	1.005	1.049	1.000			
2016		1.206	1.042	1.005				
2017		1.228	1.008					
2018		1.133						

Average		1.224	1.078	1.028	1.004	1.019	1.006	
Avg x hi / lo		1.227	1.076	1.025	1.000	1.002	1.000	
Avg 3 Year		1.189	1.019	1.031	1.000	1.029	1.000	
Avg 5 Year		1.209	1.046	1.021	1.004	1.019	1.006	
Prior		1.200	1.086	1.029	1.003	1.016	1.006	1.000
Selected		1.209	1.046	1.021	1.004	1.019	1.006	1.000
Cumulative		1.328	1.099	1.051	1.029	1.025	1.006	1.000

Notes:

Data provided by TWIA, includes commercial and farm,
excludes hurricanes Brett (1999), Claudette (2003), Rita (2005), Humberto (2007), Dolly (2008), and Ike (2008), Harvey (2017)

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

Premium Trend Analysis
TWIA Commercial Earned Premium at Present Rates

Year / Quarter	Exposure Written	Written Premium	On- Level Factors	Written	Average	Average	Exponential Fitted Trends			
				Premium at Present Rates Written	Written Premium at Present Rates Quarterly	Written Premium at Present Rates Four Quarter Ending	All-Year	5-Year	4-Year	3-Year
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2010 / 2	10,820	34,131,354	1.407	48,026,243	4,439					
2010 / 3	11,668	31,767,550	1.407	44,700,133	3,831					
2010 / 4	8,548	20,776,517	1.407	29,234,646	3,420					
2011 / 1	6,214	19,850,492	1.340	26,601,558	4,281	3,988	4,037			
2011 / 2	9,658	29,228,333	1.340	39,168,762	4,056	3,871	4,046			
2011 / 3	10,928	31,567,447	1.340	42,303,398	3,871	3,884	4,055			
2011 / 4	7,912	23,026,165	1.340	30,857,263	3,900	4,002	4,063			
2012 / 1	7,909	24,771,378	1.276	31,615,253	3,997	3,954	4,072			
2012 / 2	9,232	32,088,566	1.276	40,954,045	4,436	4,050	4,081			
2012 / 3	10,836	32,876,434	1.276	41,959,587	3,872	4,051	4,090			
2012 / 4	7,698	24,799,106	1.276	31,650,642	4,112	4,098	4,099			
2013 / 1	7,144	24,974,712	1.216	30,356,919	4,249	4,151	4,107			
2013 / 2	9,194	32,706,056	1.216	39,754,415	4,324	4,121	4,116			
2013 / 3	10,002	35,220,808	1.216	42,811,112	4,280	4,247	4,125			
2013 / 4	7,133	24,211,988	1.216	29,429,823	4,126	4,253	4,134			
2014 / 1	6,329	23,028,882	1.158	26,658,810	4,212	4,246	4,143			
2014 / 2	8,964	35,219,745	1.158	40,771,257	4,548	4,307	4,152			
2014 / 3	8,292	29,887,118	1.158	34,598,075	4,172	4,280	4,161			
2014 / 4	6,088	21,627,063	1.158	25,036,029	4,112	4,282	4,170			
2015 / 1	6,464	24,808,373	1.103	27,351,231	4,231	4,286	4,179	4,249		
2015 / 2	7,870	33,339,199	1.103	36,756,467	4,670	4,309	4,188	4,250		
2015 / 3	7,657	28,055,666	1.103	30,931,372	4,040	4,276	4,197	4,251		
2015 / 4	4,802	17,430,504	1.103	19,217,131	4,002	4,264	4,206	4,252		
2016 / 1	5,512	22,487,925	1.050	23,612,321	4,284	4,277	4,215	4,254	4,215	
2016 / 2	6,522	28,623,450	1.050	30,054,623	4,608	4,239	4,224	4,255	4,220	
2016 / 3	6,507	25,417,054	1.050	26,687,907	4,101	4,266	4,233	4,256	4,225	
2016 / 4	4,047	14,955,154	1.050	15,702,912	3,880	4,253	4,242	4,257	4,231	
2017 / 1	4,263	17,482,209	1.050	18,356,319	4,306	4,255	4,251	4,258	4,236	4,179
2017 / 2	5,717	25,224,489	1.050	26,485,713	4,633	4,248	4,260	4,259	4,241	4,192
2017 / 3	5,172	19,050,031	1.050	20,002,533	3,867	4,195	4,270	4,260	4,246	4,205
2017 / 4	3,489	13,077,837	1.050	13,731,729	3,936	4,215	4,279	4,261	4,251	4,219
2018 / 1	3,663	15,807,970	1.000	15,807,970	4,316	4,214	4,288	4,263	4,256	4,232
2018 / 2	5,108	22,862,777	1.000	22,862,777	4,476	4,154	4,297	4,264	4,262	4,245
2018 / 3	4,612	17,927,115	1.000	17,927,115	3,887	4,168	4,306	4,265	4,267	4,259
2018 / 4	3,109	12,284,401	1.000	12,284,401	3,951	4,177	4,316	4,266	4,272	4,273
2019 / 1	2,933	14,759,154	1.000	14,759,154	5,032	4,304	4,325	4,267	4,277	4,286
2019 / 2	4,431	20,959,587	1.000	20,959,587	4,730	4,371	4,334	4,268	4,282	4,300
2019 / 3	3,993	14,943,999	1.000	14,943,999	3,743	4,351	4,344	4,269	4,288	4,313
2019 / 4	2,966	12,109,737	1.000	12,109,737	4,083	4,383	4,353	4,270	4,293	4,327
(12) Average Annual Change							0.9%	0.1%	0.5%	1.3%
(13) Correlation Coefficient							51.4%	1.1%	12.6%	36.4%
(14) Selected Premium Trend										1.0%

- Notes:
- (2) Provided by TWIA
 - (3) Provided by TWIA
 - (4) Factor to bring written premium to current rate level
 - (5) = (3) * (4) Indexed to 2019 / 4
 - (6) = (5) / (2)
 - (7) Annualized average written premium
 - (8) - (11) fitted to an exponential distribution
 - (12) Fitted average annual change
 - (13) Evaluates the predictability of the fitted curve
 - (14) 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)
2010	1.236	1.250	1.199	1.209	1.121	1.218
2011	1.193	1.207	1.184	1.202	1.104	1.181
2012	1.149	1.155	1.153	1.170	1.083	1.137
2013	1.127	1.130	1.120	1.136	1.077	1.117
2014	1.096	1.093	1.084	1.090	1.062	1.085
2015	1.077	1.075	1.063	1.073	1.052	1.069
2016	1.082	1.080	1.074	1.085	1.035	1.069
2017	1.057	1.060	1.052	1.061	1.032	1.053
2018	1.015	1.018	1.011	1.015	1.021	1.019
2019	1.000	1.000	1.000	1.000	1.000	1.000

Factors to Adjust For Prospective Loss Costs

(8) Fitted Trend	2.0%	2.2%	1.7%	1.9%	1.1%	1.9%
(9) Cost Factor	1.051	1.056	1.044	1.049	1.028	1.048

Notes:

- (2) = Exhibit 3, Sheet 3b trended forward to 12/31/2019
- (3) = Exhibit 3, Sheet 3c trended forward to 12/31/2019
- (4) = Residential Exhibit 3, Sheet 3b trended forward to 12/31/2019
- (5) = Residential Exhibit 3, Sheet 3c trended forward to 12/31/2019
- (6) = Exhibit 3, Sheet 3d
- (7) = 25% CPI and 75% Commercial Coastal 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 7/1/2019 to 1/1/2022)

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)
3/31/2010	2174.05		
6/30/2010	2151.73		
9/30/2010	2138.05		
12/31/2010	2135.73		
3/31/2011	2144.86		
6/30/2011	2159.12		
9/30/2011	2182.25		
12/31/2011	2212.90	2241.89	2246.73
3/31/2012	2240.48	2253.90	2257.84
6/30/2012	2263.10	2265.90	2269.00
9/30/2012	2282.01	2277.91	2280.22
12/31/2012	2298.24	2289.91	2291.49
3/31/2013	2310.88	2301.92	2302.81
6/30/2013	2321.18	2313.92	2314.20
9/30/2013	2332.17	2325.93	2325.64
12/31/2013	2342.58	2337.93	2337.13
3/31/2014	2355.26	2349.94	2348.69
6/30/2014	2373.47	2361.94	2360.30
9/30/2014	2390.56	2373.95	2371.97
12/31/2014	2409.00	2385.95	2383.69
3/31/2015	2427.52	2397.96	2395.47
6/30/2015	2439.22	2409.96	2407.32
9/30/2015	2447.29	2421.97	2419.22
12/31/2015	2450.95	2433.97	2431.17
3/31/2016	2448.94	2445.98	2443.19
6/30/2016	2444.56	2457.99	2455.27
9/30/2016	2440.90	2469.99	2467.41
12/31/2016	2440.56	2482.00	2479.60
3/31/2017	2446.89	2494.00	2491.86
6/30/2017	2460.32	2506.01	2504.18
9/30/2017	2478.57	2518.01	2516.56
12/31/2017	2496.25	2530.02	2529.00
3/31/2018	2515.35	2542.02	2541.50
6/30/2018	2538.61	2554.03	2554.06
9/30/2018	2566.72	2566.03	2566.69
12/31/2018	2599.91	2578.04	2579.38
3/31/2019	2625.41	2590.04	2592.13
6/30/2019	2639.39	2602.05	2604.94
9/30/2019	2642.43	2614.05	2617.82
12/31/2019	2639.56	2626.06	2630.76
Annual Trend		1.8%	2.0%
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 Coastal Index	Fitted Trends	
		All Years Linear	Exponential
(1)	(2)	(3)	(4)
3/31/2008			
6/30/2008			
9/30/2008			
12/31/2008			
3/31/2009			
6/30/2009			
9/30/2009			
12/31/2009	2253.49	2152.21	2160.16
3/31/2010	2230.60	2165.19	2171.86
6/30/2010	2198.60	2178.18	2183.62
9/30/2010	2167.19	2191.16	2195.45
12/31/2010	2144.34	2204.14	2207.34
3/31/2011	2143.28	2217.12	2219.30
6/30/2011	2155.06	2230.11	2231.32
9/30/2011	2181.54	2243.09	2243.41
12/31/2011	2220.60	2256.07	2255.56
3/31/2012	2252.16	2269.05	2267.78
6/30/2012	2277.36	2282.04	2280.07
9/30/2012	2299.43	2295.02	2292.42
12/31/2012	2320.37	2308.00	2304.84
3/31/2013	2337.98	2320.99	2317.32
6/30/2013	2349.49	2333.97	2329.88
9/30/2013	2359.78	2346.95	2342.50
12/31/2013	2370.49	2359.93	2355.19
3/31/2014	2388.19	2372.92	2367.94
6/30/2014	2411.34	2385.90	2380.77
9/30/2014	2431.12	2398.88	2393.67
12/31/2014	2450.88	2411.86	2406.64
3/31/2015	2465.88	2424.85	2419.67
6/30/2015	2477.55	2437.83	2432.78
9/30/2015	2486.84	2450.81	2445.96
12/31/2015	2492.85	2463.80	2459.21
3/31/2016	2493.63	2476.78	2472.53
6/30/2016	2490.89	2489.76	2485.92
9/30/2016	2485.91	2502.74	2499.39
12/31/2016	2482.14	2515.73	2512.93
3/31/2017	2484.26	2528.71	2526.54
6/30/2017	2494.82	2541.69	2540.23
9/30/2017	2509.93	2554.67	2553.99
12/31/2017	2528.31	2567.66	2567.83
3/31/2018	2547.16	2580.64	2581.74
6/30/2018	2569.79	2593.62	2595.72
9/30/2018	2597.57	2606.61	2609.78
12/31/2018	2632.34	2619.59	2623.92
3/31/2019	2661.80	2632.57	2638.13
6/30/2019	2677.57	2645.55	2652.43
9/30/2019	2684.16	2658.54	2666.79
12/31/2019	2679.79	2671.52	2681.24
Annual Trend		2.0%	2.2%
R-Squared		0.942	0.937

Notes:

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

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	
		All Years Linear	Exponential	Linear	Exponential	Linear	Exponential	Linear	Exponential
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
9/30/2009	179.30	177.20	177.41						
12/31/2009	178.80	177.74	177.91						
3/31/2010	178.46	178.28	178.42						
6/30/2010	178.56	178.81	178.93						
9/30/2010	178.59	179.35	179.44						
12/31/2010	178.72	179.88	179.95						
3/31/2011	178.97	180.42	180.47						
6/30/2011	179.61	180.96	180.98						
9/30/2011	180.52	181.49	181.50						
12/31/2011	181.55	182.03	182.01						
3/31/2012	182.78	182.56	182.53						
6/30/2012	183.87	183.10	183.05						
9/30/2012	184.57	183.64	183.58						
12/31/2012	185.03	184.17	184.10						
3/31/2013	185.38	184.71	184.63						
6/30/2013	185.51	185.24	185.15						
9/30/2013	185.82	185.78	185.68						
12/31/2013	186.03	186.31	186.21						
3/31/2014	186.43	186.85	186.74						
6/30/2014	186.87	187.39	187.27						
9/30/2014	187.59	187.92	187.81						
12/31/2014	188.62	188.46	188.34						
3/31/2015	189.46	188.99	188.88	189.11	189.16				
6/30/2015	189.59	189.53	189.42	189.64	189.67				
9/30/2015	190.03	190.07	189.96	190.17	190.19				
12/31/2015	190.50	190.60	190.50	190.69	190.70				
3/31/2016	190.95	191.14	191.05	191.22	191.22	191.21	191.24		
6/30/2016	192.03	191.67	191.59	191.75	191.74	191.74	191.76		
9/30/2016	192.82	192.21	192.14	192.27	192.26	192.27	192.28		
12/31/2016	193.56	192.75	192.69	192.80	192.78	192.80	192.80		
3/31/2017	193.86	193.28	193.24	193.33	193.31	193.33	193.32	192.86	192.89
6/30/2017	194.07	193.82	193.79	193.86	193.83	193.85	193.85	193.45	193.47
9/30/2017	194.20	194.35	194.34	194.38	194.36	194.38	194.37	194.05	194.05
12/31/2017	194.18	194.89	194.90	194.91	194.89	194.91	194.90	194.64	194.64
3/31/2018	194.71	195.42	195.45	195.44	195.42	195.44	195.42	195.23	195.23
6/30/2018	195.24	195.96	196.01	195.97	195.95	195.97	195.95	195.83	195.82
9/30/2018	195.63	196.50	196.57	196.49	196.48	196.50	196.48	196.42	196.41
12/31/2018	196.26	197.03	197.13	197.02	197.01	197.03	197.02	197.01	197.00
3/31/2019	197.08	197.57	197.69	197.55	197.55	197.56	197.55	197.60	197.59
6/30/2019	198.20	198.10	198.26	198.08	198.09	198.09	198.09	198.20	198.19
9/30/2019	199.66	198.64	198.82	198.60	198.62	198.62	198.62	198.79	198.79
12/31/2019	200.38	199.18	199.39	199.13	199.16	199.14	199.16	199.38	199.39
Annual Trend		1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.2%	1.2%
R-Squared		0.987	0.987	0.962	0.963	0.930	0.932	0.902	0.905

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 Non-Hurricane LAE factor Using TWIA Commercial + Residential Experience

Accident Year	Paid Loss (\$000)	Paid ALAE (\$000)	Paid ULAE (\$000)
(1)	(2)	(3)	(4)
2010	18,005	323	3,951
2011	96,089	725	14,386
2012	66,741	829	14,961
2013	70,811	901	12,922
2014	7,002	1,017	5,796
2015	138,583	2,679	37,109
2016	28,409	484	14,882
2017	1,338,484	6,905	249,300
2018	11,663	117	6,280
2019	12,936	7	7,053
<hr/>			
Total (Excluding 2017)	450,239	7,082	117,340
<hr/>			
Paid ALAE to Loss ratio			0.016
Paid ULAE to Loss ratio			0.261
Selected Non-Hurricane LAE ratio			0.276

Notes:

- (2) = Cumulative Loss Payments as of 12/31/19 from TWIA's 2019 Schedule P
- (3) = Cumulative DCC Payments as of 12/31/19 from TWIA's 2019 Schedule P
- (4) = Cumulative AAO Payments as of 12/31/19 from TWIA's 2019 Schedule P
- Selected Non-Hurricane LAE ratio = $\frac{((3)_{Total} + (4)_{Total})}{(2)_{Total}}$
- Excluded 2017 in Non-Hurricane LAE calculation as 2017 was a hurricane year (Harvey)

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

Development of Hurricane LAE factor Using TWIA Commercial + Residential Experience

Hurricane (Year)	Loss	ALAE	ULAE	LAE Ratio
(1)	(2)	(3)	(4)	(5)
Ike (2008)	1,950,833,975	186,293,648	127,269,430	16.1%
Harvey (2017)	1,336,923,861	144,947,255	106,821,442	18.8%
<hr/>				
Total	3,287,757,836	331,240,903	234,090,872	
<hr/>				
Paid ALAE to Loss ratio				0.101
Paid ULAE to Loss ratio				0.071
Selected Hurricane LAE ratio				0.172

Notes:

- (2) = Cumulative Loss Payments as of 06/30/2020; Ike Losses reflect TWIA's estimated Residential & Commercial Hurricane Ike litigation cost reduction of \$306,292,226 stemming from House Bill 3
- (3) = Cumulative ALAE Payments as of 06/30/2020
- (4) = Cumulative ULAE Payments as of 06/30/2020
- (5) = ((3)+(4))/(2)

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	Selected Model Weight
(1)	(2)	(3)	(4)	(5)
Industry Experience	42.8%	0.172	50.2%	
<u>Hurricane Models</u>				
AIR Model	51.9%	0.172	60.9%	25%
RMS Model	39.7%	0.172	46.6%	75%
Weighted Average of Models	42.8%	0.172	50.1%	

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 - 2019 -- Hurricane Years Only

Accident Year	Earned Premium at Current TWIA Rate Level	Incurred Loss Ratio
(1)	(2)	(3)
1970	58,356,336	39.6%
1971	63,040,303	88.7%
1980	70,042,582	54.9%
1983	41,090,972	365.3%
1986	52,951,602	7.6%
1989	83,916,652	6.4%
1990	71,387,141	97.1%
1999	167,478,166	8.3%
2003	200,309,387	21.8%
2005	252,973,058	172.5%
2007	330,332,938	15.0%
2008	297,781,052	474.4%
2017	194,491,878	477.9%
(4) Simple Average Loss Ratio for Hurricane Years		140.7%
(5) Selected Non-Hurricane Loss Ratio		7.0%
(6) Average Hurricane Loss Ratio for Hurricane Years		133.7%
(7) Historical Hurricane Frequency		
(a) 50.0-Year (1/1/1970 - 12/31/2019)		0.240 (1 Hurricane year every 4.2 years)
(b) 169-Year (1/1/1851 - 12/31/2019)		0.320 (1 Hurricane year every 3.1 years)
Selected Frequency		0.320 (1 Hurricane year every 3.1 years)
(8) Indicated Hurricane Loss Ratio		42.8%

Notes:

- (2) Exhibit 6, Sheet 2
- (3) Exhibit 6, Sheet 2
- (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 - 2019

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	58,356,336	23,092,142	39.6%	H
1971	13,340,143	20,347,170	63,040,303	55,893,676	88.7%	H
1972	18,906,678	24,314,307	75,331,423	8,704,522	11.6%	
1973	21,737,541	23,257,532	72,057,286	3,837,493	5.3%	
1974	22,348,193	22,844,661	70,778,115	2,193,087	3.1%	
1975	24,396,629	24,958,305	77,326,680	3,943,412	5.1%	
1976	26,795,934	24,109,943	74,698,255	2,218,115	3.0%	
1977	30,910,821	27,119,226	84,021,720	1,898,346	2.3%	
1978	32,709,599	26,415,338	81,840,910	2,535,872	3.1%	
1979	31,306,685	24,514,306	75,951,067	4,535,147	6.0%	
1980	28,751,765	22,607,257	70,042,582	38,431,071	54.9%	H
1981	24,129,384	21,398,588	66,297,842	4,272,728	6.4%	
1982	18,505,004	17,523,231	54,291,078		3.4%	
1983	12,680,397	13,262,706	41,090,972		365.3%	H
1984	12,736,031	14,992,627	46,450,673		7.6%	
1985	15,169,575	16,422,895	50,881,979		3.7%	
1986	21,130,682	17,090,896	52,951,602		7.6%	H
1987	31,114,529	26,771,157	82,943,320		1.3%	
1988	25,065,531	24,117,319	74,721,108		8.4%	
1989	24,167,085	27,085,314	83,916,652		6.4%	H
1990	19,677,404	23,041,233	71,387,141		97.1%	H
1991	21,794,680	25,534,881	79,113,047		51.3%	
1992	23,737,753	26,950,473	83,498,883		1.3%	
1993	21,990,182		68,125,584		6.4%	
1994	16,604,950		51,442,134		8.5%	
1995	32,374,229		100,295,361		19.9%	
1996	55,367,089		171,527,241		2.4%	
1997	53,196,024		164,801,282		3.9%	
1998	53,986,058		169,786,152		15.6%	
1999	52,435,243		167,478,166		8.3%	H
2000	41,739,697		127,598,253		7.0%	
2001	42,330,042		121,614,211		5.8%	
2002	69,156,402		190,110,949		14.1%	
2003	78,368,305		200,309,387		21.8%	H
2004	112,957,791		262,400,948		2.1%	
2005	119,598,806		252,973,058		172.5%	H
2006	148,019,940		287,762,390		2.2%	
2007	186,207,969		330,332,938		15.0%	H
2008	177,673,659		297,781,052		474.4%	H
2009	185,204,697		282,807,572		2.7%	
2010	193,721,394		272,566,001		3.9%	
2011	186,576,207		256,169,132		15.7%	
2012	203,887,603		266,481,097		18.6%	
2013	224,921,677		280,027,487		7.0%	
2014	235,022,975		278,737,248		1.2%	
2015	227,324,155		256,648,972		14.5%	
2016	210,615,830		226,622,633		3.8%	
2017	185,230,360		194,491,878		477.9%	H
2018	186,441,993		190,916,602		1.3%	
2019	184,576,503		184,576,503		2.5%	
Total / Average	3,997,516,033		7,245,373,205		42.2%	
Average of Non-Hurricane Years					7.6%	
Average of Non-Hurricane Years Excluding 1991 Selected					6.4%	
					7.0%	

Notes: (2) Source: TDI. 1970 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2019 are year ending 12/31/xx as of 12/31/19
(3) Source: TDI. (1992 MR = 1992 manual rates)
(4) 1993 - 2019: Sum of Exhibit 6, Sheet 4 - Sheet 7, (5); 1970 - 1992: (3) * 3.098, factor to bring industry premium to TWIA curr't rate level
(5) Source: TDI. 1970 - 1981 are year ending 9/30/xx as of 12/31/99; 1982 - 2019 are year ending 12/31/xx as of 12/31/19
(6) 1983 - 2019: Exhibit 6, Sheet 3; 1970 - 1982: (5) / (4)
(7) "H" indicates occurrence of hurricane(s) during the time period (years ending 12/31/xx)

Accident Year	<u>Loss Ratios by Territory / Tier</u>				Weighted Loss Ratio	Selected Loss Ratio
	Territory 8	Territory 9	Territory 10	Tier 2		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1983	878.7%	3.8%	40.9%	147.2%	365.3%	365.3%
1984	7.5%	3.8%	9.7%	14.1%	7.6%	7.6%
1985	3.7%	2.5%	4.3%	7.9%	3.7%	3.7%
1986	2.9%	1.0%	15.9%	12.4%	7.6%	7.6%
1987	0.5%	1.6%	2.0%	3.0%	1.3%	1.3%
1988	11.5%	3.4%	8.1%	4.7%	8.4%	8.4%
1989	13.3%	1.7%	1.9%	5.4%	6.4%	6.4%
1990	235.5%	2.5%	8.8%	6.8%	97.1%	97.1%
1991	21.3%	21.0%	99.9%	4.6%	51.3%	51.3%
1992	0.7%	1.0%	2.1%	3.8%	1.3%	1.3%
1993	13.5%	1.7%	1.7%	5.7%	6.4%	6.4%
1994	0.3%	3.7%	19.6%	7.9%	8.5%	8.5%
1995	7.8%	10.3%	37.6%	20.6%	19.9%	19.9%
1996	1.5%	2.9%	3.1%	6.6%	2.4%	2.4%
1997	5.2%	2.0%	3.6%	9.0%	3.9%	3.9%
1998	20.7%	13.7%	11.4%	9.0%	15.6%	15.6%
1999	2.7%	12.6%	11.7%	8.9%	8.3%	8.3%
2000	2.1%	2.0%	13.8%	58.9%	7.0%	7.0%
2001	7.0%	3.2%	5.7%	28.7%	5.8%	5.8%
2002	11.7%	31.3%	7.2%	9.6%	14.1%	14.1%
2003	2.4%	8.4%	49.0%	31.1%	21.8%	21.8%
2004	2.9%	0.6%	2.0%	3.1%	2.1%	2.1%
2005	66.6%	1.7%	378.2%	50.9%	172.5%	172.5%
2006	2.3%	1.0%	2.6%	5.8%	2.2%	2.2%
2007	1.6%	56.4%	5.9%	9.9%	15.0%	15.0%
2008	700.9%	36.5%	483.0%	490.2%	474.4%	474.4%
2009	2.5%	4.7%	1.6%	9.6%	2.7%	2.7%
2010	1.5%	4.6%	6.1%	3.4%	3.9%	3.9%
2011	3.9%	31.0%	19.2%	19.1%	15.7%	15.7%
2012	19.0%	24.2%	15.3%	10.9%	18.6%	18.6%
2013	14.2%	4.3%	1.2%	7.3%	7.0%	7.0%
2014	0.6%	2.4%	1.1%	4.6%	1.2%	1.2%
2015	12.1%	4.5%	22.5%	14.4%	14.5%	14.5%
2016	0.9%	8.2%	3.8%	32.2%	3.8%	3.8%
2017	81.5%	1243.3%	469.1%	133.8%	477.9%	477.9%
2018	0.7%	1.2%	1.8%	12.9%	1.3%	1.3%
2019	1.1%	0.9%	4.3%	28.0%	2.5%	2.5%
Average	58.5%	42.2%	48.0%	33.6%	50.8%	50.8%

TWIA 2019 Written Premium by Territory / Tier

	Territory 8	Territory 9	Territory 10	Tier 2	Total
(8) Amount	23,347,170	12,542,546	22,695,795	420,408	59,005,919
(9) % Share	39.57%	21.26%	38.46%	0.71%	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 (9)
- (7) = (6)
- (8) Provided by TWIA
- (9) = (8) / (8) 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	3.098	2,999,558	26,357,425	878.7%
1984	1,195,339	1,366,667	3.098	4,233,934	318,455	7.5%
1985	2,581,481	2,777,593	3.098	8,604,983	314,878	3.7%
1986	3,013,362	2,349,181	3.098	7,277,763	211,282	2.9%
1987	3,004,153	2,585,122	3.098	8,008,708	37,480	0.5%
1988	2,905,355	2,728,206	3.098	8,451,982	969,836	11.5%
1989	2,825,114	3,015,974	3.098	9,343,487	1,244,199	13.3%
1990	2,303,321	2,474,141	3.098	7,664,889	18,053,460	235.5%
1991	2,203,500	2,080,579	3.098	6,445,634	1,371,244	21.3%
1992	2,352,391	2,012,473	3.098	6,234,641	46,331	0.7%
1993	2,406,016		3.098	7,453,838	1,005,945	13.5%
1994	2,807,090		3.098	8,696,365	28,034	0.3%
1995	2,645,757		3.098	8,196,555	635,625	7.8%
1996	5,519,716		3.098	17,100,080	249,644	1.5%
1997	5,461,636		3.098	16,920,148	886,485	5.2%
1998	6,133,105		3.145	19,288,615	3,994,564	20.7%
1999	6,706,028		3.194	21,419,053	575,316	2.7%
2000	4,997,201		3.057	15,276,443	320,131	2.1%
2001	4,785,262		2.873	13,748,058	962,576	7.0%
2002	8,206,069		2.749	22,558,484	2,632,325	11.7%
2003	8,793,047		2.556	22,475,028	529,845	2.4%
2004	12,425,339		2.323	28,864,062	830,387	2.9%
2005	13,839,253		2.112	29,228,502	19,469,845	66.6%
2006	18,414,310		1.958	36,055,219	812,370	2.3%
2007	24,924,710		1.774	44,216,436	710,669	1.6%
2008	24,970,117		1.676	41,849,916	293,310,706	700.9%
2009	29,363,002		1.527	44,837,304	1,140,669	2.5%
2010	31,708,901		1.407	44,614,424	669,882	1.5%
2011	31,271,334		1.373	42,935,542	1,675,264	3.9%
2012	35,124,210		1.307	45,907,342	8,709,842	19.0%
2013	37,650,973		1.245	46,875,461	6,670,061	14.2%
2014	38,263,554		1.186	45,380,575	258,179	0.6%
2015	36,780,958		1.129	41,525,702	5,012,267	12.1%
2016	36,187,907		1.076	38,938,188	331,694	0.9%
2017	32,595,075		1.050	34,224,829	27,903,575	81.5%
2018	33,178,454		1.024	33,974,737	245,785	0.7%
2019	33,603,360		1.000	33,603,360	378,013	1.1%
Total	552,060,265			875,429,845	428,874,288	49.0%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2019 are year ending 12/31/xx as of 12/31/19
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/18 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 86.8% of industry data in Tier 1 -- Territory 8
- (5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2019
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2008 are year ending 12/31/xx as of 12/31/17
2008 is year ending 12/31/2018; 2009 - 2018 are year ending 12/31/xx as of 12/31/2019
2008 IKE incurred loss was adjusted down by \$99,433,917
- (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	820,826	3.098	2,542,919	96,051	3.8%
1984	558,639	652,809	3.098	2,022,402	76,481	3.8%
1985	1,235,059	1,383,103	3.098	4,284,853	106,148	2.5%
1986	2,228,911	1,849,840	3.098	5,730,804	56,387	1.0%
1987	2,381,538	2,086,940	3.098	6,465,340	105,275	1.6%
1988	1,796,653	1,719,227	3.098	5,326,165	181,414	3.4%
1989	1,632,453	1,826,430	3.098	5,658,280	98,116	1.7%
1990	1,429,526	1,769,972	3.098	5,483,373	135,678	2.5%
1991	1,390,109	1,555,310	3.098	4,818,350	1,013,636	21.0%
1992	1,571,433	1,629,721	3.098	5,048,876	49,512	1.0%
1993	1,587,772		3.098	4,918,918	86,000	1.7%
1994	2,203,514		3.098	6,826,486	254,088	3.7%
1995	2,669,951		3.098	8,271,508	854,753	10.3%
1996	5,639,923		3.098	17,472,481	502,177	2.9%
1997	3,183,758		3.098	9,863,282	199,390	2.0%
1998	3,613,310		3.145	11,363,860	1,561,275	13.7%
1999	6,808,428		3.194	21,746,119	2,735,082	12.6%
2000	5,167,158		3.057	15,796,002	317,804	2.0%
2001	4,763,324		2.873	13,685,030	431,244	3.2%
2002	8,479,915		2.749	23,311,286	7,300,265	31.3%
2003	9,934,549		2.556	25,392,707	2,122,879	8.4%
2004	14,597,450		2.323	33,909,876	212,644	0.6%
2005	16,137,249		2.112	34,081,870	566,758	1.7%
2006	21,249,313		1.958	41,606,155	434,362	1.0%
2007	27,752,523		1.774	49,232,976	27,752,523	56.4%
2008	27,990,909		1.676	46,912,763	17,103,924	36.5%
2009	29,085,395		1.527	44,413,398	2,074,340	4.7%
2010	27,439,364		1.407	38,607,185	1,768,194	4.6%
2011	24,767,582		1.373	34,005,890	10,534,288	31.0%
2012	26,074,384		1.307	34,079,220	8,260,210	24.2%
2013	27,625,026		1.245	34,393,157	1,473,733	4.3%
2014	27,425,810		1.186	32,527,011	766,708	2.4%
2015	26,008,254		1.129	29,363,319	1,316,614	4.5%
2016	22,181,835		1.076	23,867,654	1,964,437	8.2%
2017	18,821,527		1.050	19,762,603	245,701,770	1243.3%
2018	18,223,401		1.024	18,660,763	227,247	1.2%
2019	16,527,733		1.000	16,527,733	145,415	0.9%
Total	440,929,663			737,980,614	338,586,822	45.9%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2017 are year ending 1/0/xx as of 12/31/17
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/18 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 88.3% of industry data in Tier 1 -- Territory 9
- (5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2019
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2008 are year ending 12/31/xx as of 12/31/17
2008 is year ending 12/31/2018; 2009 - 2018 are year ending 12/31/xx as of 12/31/2019
2008 IKE incurred loss was adjusted down by \$99,433,917
- (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	4,139,464	3.098	12,824,059	5,242,728	40.9%
1984	4,835,650	5,883,059	3.098	18,225,717	1,759,233	9.7%
1985	3,637,366	3,997,227	3.098	12,383,409	534,724	4.3%
1986	4,787,352	3,948,102	3.098	12,231,220	1,943,819	15.9%
1987	5,996,981	5,352,970	3.098	16,583,501	338,938	2.0%
1988	5,872,305	5,768,621	3.098	17,871,188	1,442,599	8.1%
1989	5,125,436	5,918,163	3.098	18,334,469	349,413	1.9%
1990	3,842,130	4,624,825	3.098	14,327,708	1,263,817	8.8%
1991	4,253,902	4,765,878	3.098	14,764,690	14,752,702	99.9%
1992	4,034,147	4,187,015	3.098	12,971,372	276,158	2.1%
1993	4,540,606		3.098	14,066,797	245,603	1.7%
1994	5,145,260		3.098	15,940,015	3,130,886	19.6%
1995	9,324,050		3.098	28,885,907	10,852,486	37.6%
1996	15,331,047		3.098	47,495,584	1,478,175	3.1%
1997	17,116,368		3.098	53,026,508	1,911,482	3.6%
1998	17,623,413		3.145	55,425,634	6,340,723	11.4%
1999	15,019,386		3.194	47,971,919	5,614,569	11.7%
2000	11,756,138		3.057	35,938,514	4,969,254	13.8%
2001	11,140,104		2.873	32,005,519	1,824,700	5.7%
2002	20,528,832		2.749	56,433,759	4,053,342	7.2%
2003	23,885,668		2.556	61,051,767	29,908,218	49.0%
2004	31,412,192		2.323	72,970,522	1,462,655	2.0%
2005	34,104,704		2.112	72,029,135	272,418,664	378.2%
2006	46,246,638		1.958	90,550,917	2,315,133	2.6%
2007	71,922,575		1.774	127,590,648	7,479,422	5.9%
2008	66,558,177		1.676	111,551,505	538,764,477	483.0%
2009	64,583,344		1.527	98,618,766	1,576,316	1.6%
2010	63,606,679		1.407	89,494,597	5,423,427	6.1%
2011	61,404,245		1.373	84,308,028	16,202,722	19.2%
2012	66,325,367		1.307	86,687,255	13,234,958	15.3%
2013	71,511,184		1.245	89,031,424	1,105,363	1.2%
2014	66,744,325		1.186	79,158,769	907,091	1.1%
2015	61,005,719		1.129	68,875,457	15,485,267	22.5%
2016	55,725,487		1.076	59,960,624	2,286,047	3.8%
2017	45,240,268		1.050	47,502,281	222,840,240	469.1%
2018	43,463,740		1.024	44,506,870	793,873	1.8%
2019	42,528,330		1.000	42,528,330	1,844,735	4.3%
Total	1,089,949,103			1,864,124,384	1,202,373,959	64.5%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2017 are year ending 12/31/xx as of 12/31/19
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/18 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 72.4% of industry data in Tier 1 -- Territory 10
- (5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2019
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2008 are year ending 12/31/xx as of 12/31/17
2008 is year ending 12/31/2018; 2009 - 2018 are year ending 12/31/xx as of 12/31/2019
2008 IKE incurred loss was adjusted down by \$99,433,917
- (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	3.098	22,721,327	33,451,768	147.2%
1984	6,146,403	7,090,092	3.098	21,965,105	3,096,573	14.1%
1985	7,715,669	8,264,972	3.098	25,604,883	2,019,280	7.9%
1986	11,101,057	8,943,773	3.098	27,707,809	3,439,343	12.4%
1987	19,731,857	16,746,125	3.098	51,879,495	1,552,595	3.0%
1988	14,491,218	13,901,265	3.098	43,066,119	2,041,063	4.7%
1989	14,584,082	16,324,747	3.098	50,574,066	2,746,147	5.4%
1990	12,102,427	14,172,295	3.098	43,905,770	2,967,816	6.8%
1991	13,947,169	17,133,114	3.098	53,078,387	2,440,246	4.6%
1992	15,779,782	19,121,264	3.098	59,237,676	2,232,412	3.8%
1993	13,455,788		3.098	41,686,031	2,357,383	5.7%
1994	6,449,086		3.098	19,979,268	1,579,205	7.9%
1995	17,734,471		3.098	54,941,391	11,314,057	20.6%
1996	28,876,403		3.098	89,459,096	5,938,855	6.6%
1997	27,434,262		3.098	84,991,344	7,691,121	9.0%
1998	26,616,230		3.145	83,708,043	7,574,576	9.0%
1999	23,901,401		3.194	76,341,075	6,821,707	8.9%
2000	19,819,200		3.057	60,587,294	35,670,537	58.9%
2001	21,641,352		2.873	62,175,604	17,852,673	28.7%
2002	31,941,586		2.749	87,807,420	8,461,924	9.6%
2003	35,755,041		2.556	91,389,885	28,411,179	31.1%
2004	54,522,810		2.323	126,656,488	3,982,223	3.1%
2005	55,697,704		2.112	117,633,551	59,821,556	50.9%
2006	61,057,252		1.958	119,550,099	6,946,289	5.8%
2007	61,608,161		1.774	109,292,878	10,794,322	9.9%
2008	58,154,456		1.676	97,466,868	477,796,637	490.2%
2009	62,172,956		1.527	94,938,104	9,127,735	9.6%
2010	70,966,450		1.407	99,849,795	3,378,802	3.4%
2011	69,133,046		1.373	94,919,672	18,130,744	19.1%
2012	76,363,642		1.307	99,807,280	10,920,824	10.9%
2013	88,134,494		1.245	109,727,445	8,026,884	7.3%
2014	102,589,286		1.186	121,670,893	5,642,475	4.6%
2015	103,529,224		1.129	116,884,494	16,863,405	14.4%
2016	96,520,601		1.076	103,856,167	33,421,153	32.2%
2017	88,573,490		1.050	93,002,165	124,480,881	133.8%
2018	91,576,398		1.024	93,774,232	12,086,495	12.9%
2019	91,917,080		1.000	91,917,080	25,743,583	28.0%
Total	1,608,992,093			2,843,754,300	1,016,824,468	35.8%

Notes:

- (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2019 are year ending 12/31/xx as of 12/31/19
- (3) Provided by TDI (1992 MR = 1992 manual rates)
- (4) Represents 1/1/98 through 1/1/18 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 - 2019
- (6) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2008 are year ending 12/31/xx as of 12/31/17
2008 is year ending 12/31/2018; 2009 - 2018 are year ending 12/31/xx as of 12/31/2019
2008 IKE incurred loss was adjusted down by \$99,433,917
- (7) = (6) / (5)

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

Exhibit 7

County	TWIA Insured Limits (000s) as of 11/30/19	Average Annual Modeled Loss	Modeled Loss Cost
(1)	(2)	(3)	(4)
Aransas	214,790	743,067	3.460
Brazoria	407,860	1,217,859	2.986
Calhoun	106,660	339,296	3.181
Cameron	940,171	3,030,587	3.223
Chambers	54,565	135,812	2.489
Galveston	2,266,405	17,834,172	7.869
Harris	34,538	190,595	5.518
Jefferson	330,152	863,629	2.616
Kenedy	694	822	1.184
Kleberg	13,597	15,075	1.109
Matagorda	81,017	245,366	3.029
Nueces	1,434,990	5,058,188	3.525
Refugio	23,556	35,689	1.515
San Patricio	109,129	249,975	2.291
Willacy	13,589	36,633	2.696
Total	6,031,713	29,996,765	4.973
(5) Inforce-Premium as of Nov 30, 2019 at Present Rates			57,743,025
(6) Indicated Hurricane Loss Ratio			51.9%

Notes:

- (2) Provided by TWIA and Geo-coded by Willis Towers Watson
- (3) Modeled by Willis Towers Watson
- (4) = (3) / (2)
- (5) Provided by TWIA
- (6) = (3) Total / (5)

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

County	TWIA Insured Limits (000s) as of 11/30/19	Average Annual Modeled Loss	Modeled Loss Cost
(1)	(2)	(3)	(4)
Aransas	214,790	741,180	3.451
Brazoria	407,860	1,329,268	3.259
Calhoun	106,660	460,024	4.313
Cameron	940,171	3,179,117	3.381
Chambers	54,565	169,330	3.103
Galveston	2,266,405	10,831,037	4.779
Harris	34,538	168,228	4.871
Jefferson	330,152	869,871	2.635
Kenedy	694	1,511	2.177
Kleberg	13,597	25,772	1.895
Matagorda	81,017	313,320	3.867
Nueces	1,434,990	4,415,047	3.077
Refugio	23,556	58,894	2.500
San Patricio	109,129	325,539	2.983
Willacy	13,589	53,172	3.913
Total	6,031,713	22,941,311	3.803
(5) Inforce-Premium as of Nov 30, 2019 at Present Rates			57,743,025
(6) Indicated Hurricane Loss Ratio			39.7%

Notes:

- (2) Provided by TWIA and Geo-coded by Willis Towers Watson
- (3) Modeled by Willis Towers Watson
- (4) = (3) / (2)
- (5) Provided by TWIA
- (6) = (3) Total / (5)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Texas Hurricanes 1850 - 2019

<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
			2017	Aug	Harvey

Frequency	Date Period	# of Hurricane	Years Period	Annual Frequency
50.0-Year	1/1/1970 - 12/31/2019	12	50.0	0.240
169-Year	1/1/1851 - 12/31/2019	54	169	0.320

Notes:
(1), (2) from NOAA Technical Memorandum NWS NHC-6, updated with actual experience through 2019

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)
1995	12,865,905	3.098	39,858,574	36,461,264
1996	15,640,660	3.098	48,454,765	44,156,670
1997	16,536,186	3.098	51,229,104	49,841,935
1998	16,558,977	3.193	52,872,814	52,050,959
1999	17,394,142	3.193	55,539,496	54,206,155
2000	17,332,561	2.930	50,784,404	53,161,950
2001	17,544,251	2.817	49,422,155	50,103,280
2002	24,013,525	2.684	64,452,301	56,937,228
2003	29,220,514	2.440	71,298,054	67,875,178
2004	31,009,323	2.218	68,778,678	70,038,366
2005	35,740,174	2.016	72,052,191	70,415,435
2006	76,847,840	1.870	143,705,461	107,878,826
2007	110,951,718	1.714	190,171,245	166,938,353
2008	98,036,118	1.633	160,092,981	175,132,113
2009	111,269,573	1.423	158,336,602	159,214,792
2010	102,174,680	1.407	143,759,774	151,048,188
2011	100,017,021	1.340	134,022,808	138,891,291
2012	110,524,397	1.276	141,029,130	137,525,969
2013	112,904,624	1.216	137,292,023	139,160,577
2014	104,642,688	1.158	121,176,233	129,234,128
2015	98,715,934	1.102	108,784,959	114,980,596
2016	88,278,690	1.050	92,692,625	100,738,792
2017	70,749,081	1.050	74,286,535	83,489,580
2018	65,696,833	1.000	65,696,833	69,991,684
2019	59,123,729	1.000	59,123,729	62,410,281
Total	1,543,789,143		2,354,913,474	2,341,883,590

Notes:

- (2) Provided by TWIA
- (3) Exhibit 10, Sheet 2
- (4) = (2) * (3) (calculated on a monthly basis)
- (5) Calculated from (4), using annual uniform earning assumption for 2003 and prior and monthly for 2004 and after

Year	Rate Level in Effect			E.O.Y.	Cumulative Rate Level		# Months				E.O.Y.	Average Rate Level	Factor to Current Rate Level	
	Applicable Rates		B.O.Y.		B.O.Y.	B.O.Y.	B.O.Y.	B.O.Y.	B.O.Y.	B.O.Y.				
(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	4.637
1981	8/1/1980			9/1/1981	1.175			1.132	8.0			4.0	1.161	4.285
1982	9/1/1981			9/1/1982	1.132			1.428	8.0			4.0	1.231	4.042
1983	9/1/1982			10/10/1983	1.428			1.514	9.3			2.7	1.447	3.438
1984	10/10/1983			10/10/1983	1.514			1.514	12.0			0.0	1.514	3.286
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	2.181
1986	11/15/1985			11/15/1985	2.651			2.651	12.0			0.0	2.651	1.877
1987	11/15/1985			7/1/1987	2.651			2.407	6.0			6.0	2.529	1.967
1988	7/1/1987			11/1/1988	2.407			2.075	10.0			2.0	2.352	2.115
1989	11/1/1988			11/1/1988	2.075			2.075	12.0			0.0	2.075	2.398
1990	11/1/1988			3/1/1990	2.075			2.104	2.0			10.0	2.099	2.370
1991	3/1/1990			4/1/1991	2.104			2.083	3.0			9.0	2.088	2.383
1992	1/1/1992			1/1/1992	1.606			1.606	12.0			0.0	1.606	3.098
1993	1/1/1992			10/1/1993	1.606			1.606	9.0			3.0	1.606	3.098
1994	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.098
1995	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.098
1996	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.098
1997	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.098
1998	1/1/1998			1/1/1998	1.558			1.558	12.0			0.0	1.558	3.193
1999	1/1/1998			1/1/1998	1.558			1.558	12.0			0.0	1.558	3.193
2000	1/1/2000			1/1/2000	1.698			1.698	12.0			0.0	1.698	2.930
2001	1/1/2001			1/1/2001	1.766			1.766	12.0			0.0	1.766	2.817
2002	1/1/2002			1/1/2002	1.854			1.854	12.0			0.0	1.854	2.684
2003	1/1/2003			1/1/2003	2.039			2.039	12.0			0.0	2.039	2.440
2004	1/1/2004			1/1/2004	2.243			2.243	12.0			0.0	2.243	2.218
2005	1/1/2005			1/1/2005	2.468			2.468	12.0			0.0	2.468	2.016
2006	1/1/2006			9/1/2006	2.591			2.798	8.0			4.0	2.660	1.870
2007	1/1/2007			1/1/2007	2.902			2.902	12.0			0.0	2.902	1.714
2008	1/1/2007			2/1/2008	2.902			3.059	1.0			11.0	3.046	1.633
2009	2/1/2008			2/1/2009	3.059			3.536	1.0			11.0	3.496	1.423
2010	2/1/2009			2/1/2009	3.536			3.536	12.0			0.0	3.536	1.407
2011	1/1/2011			1/1/2011	3.713			3.713	12.0			0.0	3.713	1.340
2012	1/1/2012			1/1/2012	3.898			3.898	12.0			0.0	3.898	1.276
2013	1/1/2013			1/1/2013	4.093			4.093	12.0			0.0	4.093	1.216
2014	1/1/2014			1/1/2014	4.298			4.298	12.0			0.0	4.298	1.158
2015	1/1/2015			1/1/2016	4.513			4.738	12.0			0.0	4.513	1.102
2016	1/1/2016			1/1/2017	4.738			4.738	12.0			0.0	4.738	1.050
2017	1/1/2017			1/1/2018	4.738			4.975	12.0			0.0	4.738	1.050
2018	1/1/2018			1/1/2019	4.975			4.975	12.0			0.0	4.975	1.000
2019	1/1/2019			1/1/2020	4.975			4.975	12.0			0.0	4.975	1.000
Current								4.975					4.975	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
1/1/17	0.0%	4.738
1/1/18	5.0%	4.975
1/1/19	0.0%	4.975

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 Permissible Loss & LAE Ratios

Expense Category	2017	2018	2019	Selected
(1) Direct Written Premium	\$423,074,138	\$395,551,679	\$372,016,601	
(2) Direct Earned Premium	\$451,347,130	\$409,954,258	\$381,571,182	
(3) Commission				
\$ Amount	67,661,211	63,280,811	59,474,929	
% 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	\$26,489,941	\$30,756,501	\$31,461,936	
% of DEP	5.9%	7.5%	8.2%	8.5%
(6) Taxes, Licenses & Fees				
\$ Amount	\$8,281,293	\$7,590,295	\$7,024,246	
% of DWP	2.0%	1.9%	1.9%	1.9%
(7) Reinsurance Expense				15.2%
(8) Outstanding Class 1 Public Security Repayment				17.9%
(9) Total Fixed Expenses				41.6%
(10) Total Variable Expenses				17.9%
(11) Underwriting Contingency & Uncertainty Provision				5.0%
(12) Permissible Loss, LAE, and Fixed Expense Ratio				77.1%

Notes:

- (1) - (6) From TWIA's Statutory Annual Statements and Insurance Expense Exhibits
- (7) Exhibit 11, Sheet 2
- (8) Outstanding Class 1 Public Security issued in 2014, Security depleted due to Hurricane Harvey;
0.179= Annual principal and interest payment of \$68.9M / Earned premium at present rate of \$384.7M
- (9) = (5) + (7) + (8)
- (10) = (3) + (4) + (6)
- (11) Underwriting Contingency & Uncertainty Provision selected judgmentally
- (12) = 100% - (10) - (11)

	Net of Depop
(1) 2021 - 2022 Expected Reinsurance Premium	12,966,289
(2a) Expected Average Annual Loss by Reinsurance Layer (AIR) 100% of \$921M xs \$2.1B	3,249,495
Total	3,249,495
(2b) Expected Average Annual Loss by Reinsurance Layer (RMS) 100% of \$921M xs \$2.1B	2,650,230
Total	2,650,230
(2c) Selected Total Average Annual Loss	2,949,862
(2d) Selected Total Average Annual Loss+LAE	3,457,239
(3) Expected Net Cost of Reinsurance	9,509,050
(4) TWIA 2019 Earned Premium at Present Rates	62,410,281
(5) Indicated Reinsurance Expense %	15.2%

Notes:

(1) Developed by Willis Towers Watson for prospective reinsurance contract effective 6/1/2021 through 5/31/2022, but doesn't consider impact of reinsurance market conditions.

(2a) Developed by Willis Towers Watson, based on AIR model using TWIA exposures as of 11/30/2019

(2b) Developed by Willis Towers Watson, based on RMS model using TWIA exposures as of 11/30/2019

(2c) Selected based on a 50% RMS/50% AIR weighting

(2d) = (2c) * 1.172; 1.172 is the selected loading for loss adjustment expenses

(3) = (1) - (2d)

(4) = Commercial Exhibit 10, Sheet 1

(5) = (3) / (4)

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 Direct & Assumed Paid Loss	Difference
	Commercial & Farm	Residential	Total		
(1)	(2)	(3)	(4)	(5)	(6)
2009	2,553,456	8,479,585	11,033,041	10,403,000	630,041
2010	7,478,289	10,958,718	18,437,006	18,005,000	432,006
2011	19,217,587	76,980,633	96,198,219	96,089,000	109,219
2012	14,459,642	52,332,695	66,792,337	66,741,000	51,337
2013	7,351,329	63,503,334	70,854,663	70,811,000	43,663
2014	1,056,281	6,114,172	7,170,453	7,002,000	168,453
2015	18,644,220	119,859,509	138,503,729	138,583,000	(79,271)
2016	2,596,505	25,889,298	28,485,803	28,409,000	76,803
2017	437,190,922	901,238,563	1,338,429,484	1,338,484,000	(54,516)
2018	186,803	11,649,295	11,836,099	11,663,000	173,099
2019	806,862	12,384,305	13,191,168	12,936,000	255,168
Total	511,541,895	1,289,390,107	1,800,932,002	1,799,126,000	1,806,002

Notes:

- (2), (3) Provided by TWIA, as of 12/31/2019
- (4) = (2) + (3)
- (5) Based on TWIA 2019 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)
2009	111,269,573	269,535,059	380,804,632	382,342,402	(1,537,770)
2010	102,174,680	278,116,922	380,291,602	385,549,582	(5,257,980)
2011	100,017,021	307,494,236	407,511,257	403,748,164	3,763,093
2012	110,524,397	335,795,725	446,320,122	443,479,701	2,840,421
2013	112,904,624	360,838,081	473,742,705	472,739,474	1,003,231
2014	104,642,688	389,333,918	493,976,606	494,036,010	(59,404)
2015	98,715,934	407,969,846	506,685,780	503,824,316	2,861,464
2016	88,278,690	399,074,847	487,353,537	487,353,537	-
2017	70,749,081	352,368,052	423,117,133	423,074,138	42,995
2018	65,696,833	331,676,957	397,373,790	395,551,679	1,822,111
2019	59,123,729	314,907,159	374,030,888	372,016,601	2,014,287
Total	1,024,097,249	3,747,110,802	4,771,208,051	4,763,715,604	7,492,447

Notes:

- (2), (3) Provided by TWIA, as of 12/31/2019
- (4) = (2) + (3)
- (5) Based on TWIA Annual Statements
- (6) = (4) - (5)