

**Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
2023 Rate Level Review**

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

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Summary of Indicated Rate Change
By Method for Projecting Hurricane Loss & LAE

Hurricane Projection Method	Indicated Loss & LAE Ratio				Permissible LLAE Ratio	2023
	Hurricane	Non-Hurricane	Fixed Expenses	Total		Indicated Rate Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Using Experience and Models	54.6%	5.5%	33.9%	94.0%	77.1%	22.0%
Using Actual Industry Experience	48.1%	5.5%	33.9%	87.5%	77.1%	13.0%
Verisk	82.4%	5.5%	33.9%	121.8%	77.1%	58.0%
RMS	67.6%	5.5%	33.9%	107.0%	77.1%	39.0%
Impact Forecasting	44.4%	5.5%	33.9%	83.8%	77.1%	9.0%
CoreLogic RQE Model	49.7%	5.5%	33.9%	89.1%	77.1%	16.0%
Average of All Models	61.1%	5.5%	33.9%	100.5%	77.1%	30.3%

Notes:

- (2) Exhibit 5
- (3) Exhibit 2, Sheet 1
- (4) Exhibit 11
- (5) = (2) + (3) + (4)
- (6) Exhibit 11
- (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)
2013	7,351,329	0.289	1.171	11,096,236	146,084,496	7.6%
2014	1,056,281	0.289	1.146	1,560,332	135,603,583	1.2%
2015	18,718,279	0.289	1.123	27,095,589	120,726,959	22.4%
2016	2,551,122	0.289	1.121	3,686,292	105,842,224	3.5%
2017	1,998,222	0.289	1.094	2,817,825	87,703,816	3.2%
2018	253,368	0.289	1.047	341,941	73,508,956	0.5%
2019	950,344	0.289	1.078	1,320,543	65,530,795	2.0%
2020	616,547	0.289	1.152	915,528	62,711,660	1.5%
2021	794,655	0.289	1.050	1,075,526	64,939,142	1.7%
2022	1,126,248	0.289	1.031	1,496,737	77,659,503	1.9%
Total	35,416,395			51,406,549	940,311,134	5.5%

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)

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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)
2013	7,351,329	1.000	7,351,329
2014	1,056,281	1.000	1,056,281
2015	18,718,279	1.000	18,718,279
2016	2,551,122	1.000	2,551,122
2017	2,000,222	0.999	1,998,222
2018	251,357	1.008	253,368
2019	941,867	1.009	950,344
2020	594,548	1.037	616,547
2021	712,057	1.116	794,655
2022	841,111	1.339	1,126,248
Total	35,018,173		35,416,395

Notes:

- (2) Exhibit 2, Sheet 3, as of 12/31/22
- (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 12/31/22

Accident Year	Paid Loss Excluding Expense			Total
	(1)	(2)	(3)	
2013		7,351,329	0	7,351,329
2014		1,056,281	0	1,056,281
2015		18,718,279	0	18,718,279
2016		2,551,122	0	2,551,122
2017		2,000,222	466,420,550	468,420,772
2018		251,357	0	251,357
2019		941,867	0	941,867
2020		594,548	5,739,255	6,333,803
2021		712,057	6,620,330	7,332,387
2022		841,111	0	841,111
Total		35,018,173	478,780,135	513,798,308

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) Current Average Earned Date	7/1/2022
2013 / 4	4,465.39	(4) Current Average Accident Date	7/1/2022
2014 / 4	4,496.26	(5) Prospective Average Earned / Accident Date	1/1/2025
2015 / 4	4,477.63	(6) Premium Trend Length	2.500
2016 / 4	4,465.23	(7) Loss Trend Length	2.500
2017 / 4	4,426.00	(8) Selected Premium Trend	5.7%
2018 / 4	4,385.54	(9) Selected Loss Trend	7.0%
2019 / 4	4,601.77		
2020 / 4	4,930.85		
2021 / 4	5,052.90		
2022 / 4	5,737.33		

Accident Year	Current Premium Trend	Current Loss Trend	Prospective Premium Trend	Prospective Loss Trend	Net Trend Factor
(10)	(11)	(12)	(13)	(14)	(15)
2013	1.285	1.459	1.149	1.184	1.171
2014	1.276	1.418	1.149	1.184	1.146
2015	1.281	1.396	1.149	1.184	1.123
2016	1.285	1.397	1.149	1.184	1.121
2017	1.296	1.376	1.149	1.184	1.094
2018	1.308	1.329	1.149	1.184	1.047
2019	1.247	1.304	1.149	1.184	1.078
2020	1.164	1.300	1.149	1.184	1.152
2021	1.135	1.156	1.149	1.184	1.050
2022	1.000	1.000	1.149	1.184	1.031

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 2022 / 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)
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	1,056
2015		15,923	17,690	17,780	18,644	18,644	18,673	18,718
2016		2,055	2,479	2,584	2,597	2,597	2,597	2,551
2017		1,599	1,963	1,979	1,999	1,999	2,000	
2018		165	187	238	251	251		
2019		807	875	887	942			
2020		393	595	595				
2021		561	712					
2022		841						

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)
2013		1.052	1.013	1.002	1.000	1.000	1.000	
2014		1.365	1.160	1.040	1.000	1.000	1.000	
2015		1.111	1.005	1.049	1.000	1.002	1.002	
2016		1.206	1.042	1.005	1.000	1.000	0.982	
2017		1.228	1.008	1.010	1.000	1.001		
2018		1.133	1.273	1.055	1.000			
2019		1.084	1.014	1.062				
2020		1.514	1.000					
2021		1.269						

Average		1.218	1.064	1.032	1.000	1.000	0.996	
Avg x hi / lo		1.200	1.040	1.032	1.000	1.000	1.000	
Avg 3 Year		1.289	1.095	1.042	1.000	1.001	0.995	
Avg 5 Year		1.246	1.067	1.036	1.000	1.000	0.996	
Prior		1.200	1.087	1.024	1.002	1.018	1.002	1.000
Selected		1.200	1.076	1.028	1.001	1.009	0.999	1.000
Cumulative		1.339	1.116	1.037	1.009	1.008	0.999	1.000

Notes:

Provided by TWIA, includes commercial and farm
Excludes hurricanes Brett (1999), Claudette (2003), Rita (2005), Humberto (2007), Dolly (2008)
Ike (2008), Harvey (2017), Hanna (2020), Laura (2020), Delta (2020), and Nicholas (2021)

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Premium Trend Analysis
TWIA Commercial Earned Premium at Present Rates

Year / Quarter	Exposure Written	Written Premium	On- Level Factors	Written Premium at Present Rates	Average Written Premium at Present Rates Quarterly	Average Written Premium at Present Exponential Fitted Trends				
						Rates Four Quarter Ending	All-Year	5-Year	4-Year	3-Year
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2013 / 1	7,144	24,974,712	1.276	31,874,764	4,462					
2013 / 2	9,194	32,706,056	1.276	41,742,136	4,540					
2013 / 3	10,002	35,220,808	1.276	44,951,668	4,494					
2013 / 4	7,133	24,211,988	1.276	30,901,314	4,332	4,465				
2014 / 1	6,329	23,028,882	1.216	27,991,750	4,423	4,458	4,268			
2014 / 2	8,964	35,219,745	1.216	42,809,820	4,776	4,522	4,289			
2014 / 3	8,292	29,887,118	1.216	36,327,979	4,381	4,493	4,310			
2014 / 4	6,088	21,627,063	1.216	26,287,830	4,318	4,496	4,332			
2015 / 1	6,464	24,808,373	1.158	28,718,793	4,443	4,500	4,353			
2015 / 2	7,870	33,339,199	1.158	38,594,290	4,904	4,525	4,374			
2015 / 3	7,657	28,055,666	1.158	32,477,940	4,242	4,490	4,396			
2015 / 4	4,802	17,430,504	1.158	20,177,987	4,202	4,478	4,418			
2016 / 1	5,512	22,487,925	1.103	24,792,937	4,498	4,491	4,439			
2016 / 2	6,522	28,623,450	1.103	31,557,354	4,839	4,451	4,461			
2016 / 3	6,507	25,417,054	1.103	28,022,302	4,306	4,479	4,483			
2016 / 4	4,047	14,955,154	1.103	16,488,057	4,074	4,465	4,505			
2017 / 1	4,263	17,482,209	1.103	19,274,135	4,521	4,468	4,527			
2017 / 2	5,717	25,224,489	1.103	27,809,999	4,864	4,461	4,550			
2017 / 3	5,172	19,050,031	1.103	21,002,659	4,061	4,405	4,572			
2017 / 4	3,489	13,077,837	1.103	14,418,315	4,133	4,426	4,595			
2018 / 1	3,663	15,807,970	1.050	16,598,369	4,531	4,425	4,617	4,258.52		
2018 / 2	5,108	22,862,777	1.050	24,005,916	4,700	4,361	4,640	4,312.25		
2018 / 3	4,612	17,927,115	1.050	18,823,471	4,081	4,377	4,663	4,366.67		
2018 / 4	3,109	12,284,401	1.050	12,898,621	4,149	4,386	4,686	4,421.76		
2019 / 1	2,933	14,759,154	1.050	15,497,112	5,284	4,519	4,709	4,477.56	4,415.24	
2019 / 2	4,431	20,959,587	1.050	22,007,566	4,967	4,589	4,732	4,534.05	4,477.68	
2019 / 3	3,993	14,943,999	1.050	15,691,199	3,930	4,569	4,755	4,591.26	4,541.01	
2019 / 4	2,966	12,109,737	1.050	12,715,224	4,287	4,602	4,779	4,649.20	4,605.23	
2020 / 1	2,719	14,566,185	1.050	15,294,494	5,625	4,657	4,802	4,707.86	4,670.36	4,566.36
2020 / 2	3,982	18,776,705	1.050	19,715,540	4,951	4,642	4,826	4,767.26	4,736.41	4,646.20
2020 / 3	3,970	15,951,658	1.050	16,749,241	4,219	4,728	4,850	4,827.42	4,803.39	4,727.43
2020 / 4	2,710	13,543,203	1.050	14,220,363	5,247	4,931	4,874	4,888.33	4,871.32	4,810.08
2021 / 1	2,521	12,672,604	1.050	13,306,234	5,278	4,854	4,898	4,950.01	4,940.22	4,894.18
2021 / 2	4,228	20,348,072	1.050	21,365,476	5,053	4,888	4,922	5,012.47	5,010.08	4,979.75
2021 / 3	3,892	16,793,147	1.050	17,632,804	4,531	4,983	4,946	5,075.71	5,080.94	5,066.81
2021 / 4	3,112	16,369,478	1.050	17,187,952	5,523	5,053	4,970	5,139.76	5,152.79	5,155.39
2022 / 1	2,725	15,396,927	1.000	15,396,927	5,650	5,129	4,995	5,204.61	5,225.67	5,245.53
2022 / 2	4,642	25,560,832	1.000	25,560,832	5,506	5,273	5,020	5,270.28	5,299.57	5,337.24
2022 / 3	5,337	29,199,819	1.000	29,199,819	5,471	5,523	5,044	5,336.78	5,374.52	5,430.55
2022 / 4	3,496	22,787,093	1.000	22,787,093	6,518	5,737	5,069	5,404.12	5,450.53	5,525.49
(14) Average Annual Change							2.0%	5.1%	5.8%	7.2%
(15) Correlation Coefficient							68.1%	91.3%	90.0%	90.6%
(16) Selected Premium Trend										5.7%

- Notes:
- (2) Provided by TWIA
 - (3) Provided by TWIA
 - (4) Factor to bring written premium to current rate level
 - (5) = (3) * (4)
 - (6) = (5) / (2)
 - (7) annualized average written premium
 - (8) - (11) fitted to an exponential distribution
 - (14) Fitted average annual change
 - (15) Evaluates the predictability of the fitted curve
 - (16) Selected based on judgment

Texas Windstorm Insurance Association
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Loss Trend Analysis
Summary of Indices and Calculation of Prospective Loss Costs

Calendar Year Ending 12/31/xx	Commercial		Residential		Modified CPI	Weighted Average
	Statewide Boeckh	Coastal Boeckh	Statewide Boeckh	Coastal Boeckh		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2013	1.539	1.545	1.471	1.505	1.199	1.459
2014	1.497	1.496	1.426	1.448	1.182	1.418
2015	1.472	1.471	1.390	1.414	1.171	1.396
2016	1.478	1.478	1.399	1.424	1.152	1.397
2017	1.445	1.451	1.384	1.408	1.149	1.376
2018	1.388	1.393	1.334	1.354	1.137	1.329
2019	1.366	1.367	1.303	1.313	1.114	1.304
2020	1.348	1.352	1.294	1.309	1.145	1.300
2021	1.181	1.181	1.158	1.178	1.079	1.156
2022	1.000	1.000	1.000	1.000	1.000	1.000

Factors to Adjust For Prospective Loss Costs

(8) Fitted Trend	6.9%	7.0%	6.7%	6.9%	2.3%	7.0%
(9) Cost Factor	1.182	1.185	1.176	1.182	1.059	1.184

Notes:

- (2) = Exhibit 3, Sheet 3b trended forward to 12/31/2022
- (3) = Exhibit 3, Sheet 3c trended forward to 12/31/2022
- (4) = Residential Exhibit 3, Sheet 3b trended forward to 12/31/2022
- (5) = Residential Exhibit 3, Sheet 3c trended forward to 12/31/2022
- (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 7/1/2022 to 1/1/2025)

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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)
3/31/2013	2311.88		
6/30/2013	2322.19		
9/30/2013	2333.17		
12/31/2013	2343.59		
3/31/2014	2355.26		
6/30/2014	2373.47		
9/30/2014	2390.56		
12/31/2014	2409.00	2234.03	2274.54
3/31/2015	2427.52	2261.80	2296.99
6/30/2015	2439.22	2289.57	2319.67
9/30/2015	2447.29	2317.34	2342.57
12/31/2015	2450.95	2345.11	2365.70
3/31/2016	2448.94	2372.88	2389.06
6/30/2016	2444.56	2400.65	2412.65
9/30/2016	2440.90	2428.43	2436.47
12/31/2016	2440.56	2456.20	2460.52
3/31/2017	2446.89	2483.97	2484.82
6/30/2017	2460.32	2511.74	2509.35
9/30/2017	2478.57	2539.51	2534.12
12/31/2017	2496.25	2567.28	2559.14
3/31/2018	2515.35	2595.05	2584.41
6/30/2018	2538.61	2622.83	2609.93
9/30/2018	2566.72	2650.60	2635.69
12/31/2018	2599.91	2678.37	2661.72
3/31/2019	2627.77	2706.14	2687.99
6/30/2019	2641.74	2733.91	2714.53
9/30/2019	2644.70	2761.68	2741.33
12/31/2019	2641.83	2789.45	2768.40
3/31/2020	2639.30	2817.22	2795.73
6/30/2020	2643.99	2845.00	2823.33
9/30/2020	2652.72	2872.77	2851.21
12/31/2020	2676.19	2900.54	2879.36
3/31/2021	2711.53	2928.31	2907.79
6/30/2021	2775.76	2956.08	2936.50
9/30/2021	2918.59	2983.85	2965.49
12/31/2021	3055.70	3011.62	2994.77
3/31/2022	3209.62	3039.40	3024.33
6/30/2022	3387.07	3067.17	3054.19
9/30/2022	3500.62	3094.94	3084.35
12/31/2022	3607.46	3122.71	3114.80
Annual Trend		3.6%	6.9%
R-Squared		0.699	0.741

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)
3/31/2011			
6/30/2011			
9/30/2011			
12/31/2011			
3/31/2012			
6/30/2012			
9/30/2012			
12/31/2012	2320.37	2196.97	2238.77
3/31/2013	2341.44	2219.69	2257.06
6/30/2013	2352.95	2242.42	2275.50
9/30/2013	2363.24	2265.14	2294.08
12/31/2013	2373.95	2287.87	2312.82
3/31/2014	2388.19	2310.60	2331.72
6/30/2014	2411.34	2333.32	2350.76
9/30/2014	2431.12	2356.05	2369.97
12/31/2014	2450.88	2378.77	2389.32
3/31/2015	2465.88	2401.50	2408.84
6/30/2015	2477.55	2424.22	2428.52
9/30/2015	2486.84	2446.95	2448.36
12/31/2015	2492.85	2469.67	2468.36
3/31/2016	2493.63	2492.40	2488.52
6/30/2016	2490.89	2515.13	2508.85
9/30/2016	2485.91	2537.85	2529.34
12/31/2016	2482.14	2560.58	2550.00
3/31/2017	2484.26	2583.30	2570.83
6/30/2017	2494.82	2606.03	2591.83
9/30/2017	2509.93	2628.75	2613.00
12/31/2017	2528.31	2651.48	2634.35
3/31/2018	2547.16	2674.20	2655.87
6/30/2018	2569.79	2696.93	2677.56
9/30/2018	2597.57	2719.66	2699.44
12/31/2018	2632.34	2742.38	2721.49
3/31/2019	2664.51	2765.11	2743.72
6/30/2019	2680.28	2787.83	2766.13
9/30/2019	2686.96	2810.56	2788.72
12/31/2019	2682.59	2833.28	2811.50
3/31/2020	2677.51	2856.01	2834.47
6/30/2020	2680.49	2878.74	2857.62
9/30/2020	2689.00	2901.46	2880.97
12/31/2020	2713.08	2924.19	2904.50
3/31/2021	2750.06	2946.91	2928.23
6/30/2021	2818.86	2969.64	2952.15
9/30/2021	2957.69	2992.36	2976.26
12/31/2021	3104.22	3015.09	3000.57
3/31/2022	3260.46	3037.81	3025.08
6/30/2022	3440.56	3060.54	3049.80
9/30/2022	3563.65	3083.27	3074.71
12/31/2022	3667.38	3105.99	3099.82
Annual Trend		3.0%	7.0%
R-Squared		0.705	0.757

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)
9/30/2012	184.57	182.06	182.52						
12/31/2012	185.03	182.71	183.12						
3/31/2013	185.38	183.36	183.72						
6/30/2013	185.51	184.01	184.32						
9/30/2013	185.82	184.66	184.92						
12/31/2013	186.03	185.31	185.53						
3/31/2014	186.43	185.96	186.14						
6/30/2014	186.87	186.61	186.75						
9/30/2014	187.59	187.25	187.36						
12/31/2014	188.62	187.90	187.97						
3/31/2015	189.46	188.55	188.59						
6/30/2015	189.59	189.20	189.21						
9/30/2015	190.03	189.85	189.83						
12/31/2015	190.50	190.50	190.45						
3/31/2016	190.95	191.15	191.07						
6/30/2016	192.03	191.80	191.70						
9/30/2016	192.82	192.45	192.33						
12/31/2016	193.56	193.10	192.96						
3/31/2017	193.85	193.75	193.59						
6/30/2017	194.07	194.40	194.22						
9/30/2017	194.14	195.05	194.86						
12/31/2017	194.10	195.70	195.50						
3/31/2018	194.71	196.35	196.14	190.64	191.04				
6/30/2018	195.27	197.00	196.78	191.83	192.14				
9/30/2018	195.59	197.65	197.42	193.02	193.25				
12/31/2018	196.20	198.30	198.07	194.21	194.36				
3/31/2019	197.06	198.95	198.72	195.40	195.48	191.91	192.30		
6/30/2019	198.22	199.60	199.37	196.59	196.61	193.47	193.74		
9/30/2019	199.74	200.25	200.03	197.78	197.74	195.02	195.20		
12/31/2019	200.26	200.90	200.68	198.97	198.88	196.58	196.66		
3/31/2020	199.74	201.55	201.34	200.16	200.03	198.13	198.13	190.89	191.33
6/30/2020	197.71	202.20	202.00	201.35	201.18	199.69	199.62	193.48	193.73
9/30/2020	195.95	202.85	202.66	202.55	202.34	201.24	201.11	196.08	196.16
12/31/2020	194.81	203.50	203.32	203.74	203.51	202.80	202.62	198.67	198.62
3/31/2021	194.38	204.15	203.99	204.93	204.68	204.35	204.13	201.27	201.12
6/30/2021	197.57	204.80	204.66	206.12	205.86	205.91	205.66	203.86	203.64
9/30/2021	201.27	205.45	205.33	207.31	207.05	207.47	207.20	206.46	206.20
12/31/2021	206.73	206.10	206.00	208.50	208.24	209.02	208.76	209.06	208.79
3/31/2022	213.00	206.75	206.68	209.69	209.44	210.58	210.32	211.65	211.41
6/30/2022	217.20	207.40	207.35	210.88	210.65	212.13	211.90	214.25	214.06
9/30/2022	220.58	208.05	208.03	212.07	211.87	213.69	213.48	216.84	216.75
12/31/2022	223.01	208.70	208.71	213.26	213.09	215.24	215.08	219.44	219.47
Annual Trend		1.2%	1.3%	2.2%	2.3%	2.9%	3.0%	4.7%	5.1%
R-Squared		0.753	0.774	0.600	0.602	0.606	0.603	0.782	0.781

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	Projected Ultimate LAE	Ultimate LAE to Loss Ratio	Hurricane Indicator
(1)	(2)	(3)	(4)	(5)
1980	12,911	1,318	0.102	H
1981	2,512	543	0.216	
1982	796	565	0.710	
1983	148,999	9,127	0.061	H
1984	999	324	0.324	
1985	512	297	0.580	
1986	881	505	0.573	H
1987	1,897	1,056	0.557	
1988	1,160	357	0.308	
1989	12,296	3,528	0.287	H
1990	335	225	0.672	
1991	1,217	729	0.599	
1992	489	554	1.133	
1993	3,375	1,375	0.407	
1994	679	507	0.747	
1995	2,977	903	0.303	
1996	1,166	582	0.499	
1997	2,964	1,343	0.453	
1998	22,401	4,732	0.211	
1999	8,773	2,388	0.272	H
2000	6,227	1,885	0.303	
2001	24,605	1,880	0.076	
2002	5,167	5,226	1.011	
2003	155,001	5,122	0.033	H
2004	5,167	1,471	0.285	
2005	154,981	20,235	0.131	H
2006	4,276	1,110	0.260	
2007	15,745	4,941	0.314	H
2008	2,583,017	346,615	0.134	H
2009	10,407	2,219	0.213	
2010	18,005	4,274	0.237	
2011	96,073	15,108	0.157	
2012	67,492	15,833	0.235	
2013	70,835	13,829	0.195	
2014	7,009	6,817	0.973	
2015	138,818	40,123	0.289	
2016	28,442	15,396	0.541	
2017	1,410,640	281,574	0.200	H
2018	12,095	6,773	0.560	
2019	17,639	9,456	0.536	
2020	64,380	29,955	0.465	H
2021	69,196	29,966	0.433	H
2022	28,078	12,360	0.440	
All Years Total	5,220,634	903,126	0.173	
Hurricane Years Total	4,636,820	735,274	0.159	
Non-Hurricane Years				
Total	583,814	167,852	0.288	
10 Year	484,486	139,969	0.289	

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

Exhibit 4
Sheet 2

Ultimate Loss (TWIA All Lines)
\$000 Omitted

Accident Year	Incurred Loss at 12/31/22	Development Factor	Indicated Ultimate Loss
(1)	(2)	(3)	(4)
1980			12911
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			15,745
2008			2,583,017
2009			10,407
2010			18,005
2011			96,073
2012	67,492	1.000	67,492
2013	70,835	1.000	70,835
2014	7,009	1.000	7,009
2015	138,818	1.000	138,818
2016	28,442	1.000	28,442
2017	1,412,052	0.999	1,410,640
2018	12,107	0.999	12,095
2019	17,871	0.987	17,639
2020	65,493	0.983	64,380
2021	70,898	0.976	69,196
2022	28,768	0.976	28,078

Notes:

- (2) Exhibit 4, Sheet 3
- (3) Exhibit 4, Sheet 3
- (4) 2012 - 2022: (2) * (3); 1980 - 2011: 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	<u>Months of Development</u>							
	12 (1)	24 (2)	36 (3)	48 (4)	60 (5)	72 (6)	84 (7)	(8)
2013		77,204	75,204	72,860	71,823	71,286	71,068	70,835
2014		6,739	7,854	7,298	7,261	7,068	7,012	7,009
2015		147,927	139,955	140,459	139,777	138,801	138,733	138,818
2016		31,292	29,612	28,908	28,523	28,457	28,456	28,442
2017		1,278,467	1,373,877	1,445,588	1,447,150	1,421,854	1,412,052	
2018		13,197	12,326	12,193	12,069	12,107		
2019		18,155	17,949	17,624	17,871			
2020		87,095	64,821	65,493				
2021		61,907	70,898					
2022		28,768						

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)
2013		0.974	0.969	0.986	0.993	0.997	0.997	
2014		1.165	0.929	0.995	0.973	0.992	1.000	
2015		0.946	1.004	0.995	0.993	1.000	1.001	
2016		0.946	0.976	0.987	0.998	1.000	1.000	
2017		1.075	1.052	1.001	0.983	0.993		
2018		0.934	0.989	0.990	1.003			
2019		0.989	0.982	1.014				
2020		0.744	1.010					
2021		1.145						

Average		0.991	0.989	0.995	0.990	0.996	0.999	
Avg x hi / lo		1.001	0.988	0.994	0.991	0.997	1.000	
Avg 3 Year		0.959	0.994	1.002	0.994	0.998	1.000	
Avg 5 Year		0.977	1.002	0.997	0.990	0.996	0.999	
Prior		1.000	0.993	0.993	0.990	1.000	0.999	1.000
Selected		1.000	0.993	0.996	0.991	0.997	0.999	1.000
Cumulative		0.976	0.976	0.983	0.987	0.996	0.999	1.000

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

Accident Year	Incurring DCC at 12/31/22	Development Factor	Indicated Ultimate DCC	Incurring AAO	Incurring LAE
(1)	(2)	(3)	(4)	(5)	(6)
1980					1318
1981					543
1982					565
1983					9,127
1984					324
1985					297
1986				270	505
1987				652	1,056
1988				235	357
1989				2,727	3,528
1990				119	225
1991				403	729
1992				270	554
1993				806	1,375
1994				192	507
1995				698	903
1996				355	582
1997				892	1,343
1998				3,920	4,732
1999				1,757	2,388
2000				1,209	1,885
2001				1,207	1,880
2002				3,643	5,226
2003				3,239	5,122
2004				844	1,471
2005				15,229	20,235
2006				860	1,110
2007				2,489	4,941
2008	99,668	1.000	99,668	246,947	346,615
2009	223	1.000	223	1,996	2,219
2010	323	1.000	323	3,951	4,274
2011	725	1.000	725	14,383	15,108
2012	869	1.000	869	14,964	15,833
2013	901	1.000	901	12,928	13,829
2014	1,018	1.000	1,018	5,799	6,817
2015	2,973	1.000	2,973	37,150	40,123
2016	511	1.000	511	14,885	15,396
2017	17,429	0.988	17,220	264,354	281,574
2018	385	0.959	369	6,404	6,773
2019	665	0.952	633	8,823	9,456
2020	2,652	0.945	2,506	27,449	29,955
2021	2,244	1.225	2,749	27,217	29,966
2022	584	1.838	1,073	11,287	12,360

Notes:

- (2) Exhibit 4, Sheet 5
- (3) Exhibit 4, Sheet 5
- (4) 2008 - 2022: (2) * (3); 1986 - 2007: from TWIA's annual statements
- (5) From TWIA's annual statements
- (6) 1986 - 2022: (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 DCC (Including IBNR)

Accident Year	<u>Months of Development</u>							
	12 (1)	24 (2)	36 (3)	48 (4)	60 (5)	72 (6)	84 (7)	84 (8)
2012		516	679	719	632	917	880	869
2013		802	806	715	1,089	991	971	901
2014		516	493	1,085	1,266	1,077	1,028	1,018
2015		973	1,818	2,355	2,749	2,944	2,838	2,973
2016		412	678	746	571	542	524	511
2017		891	16,490	21,865	21,700	17,745	17,429	
2018		301	361	352	319	385		
2019		48	471	706	665			
2020		295	1,654	2,652				
2021		776	2,244					
2022		584						

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)
2012		1.316	1.059	0.879	1.451	0.960	0.988
2013		1.005	0.887	1.523	0.910	0.980	0.928
2014		0.955	2.201	1.167	0.851	0.955	0.990
2015		1.868	1.295	1.167	1.071	0.964	1.048
2016		1.646	1.100	0.765	0.949	0.967	0.975
2017		18.507	1.326	0.992	0.818	0.982	
2018		1.199	0.975	0.906	1.207		
2019		9.813	1.499	0.942			
2020		5.607	1.603				
2021		2.892					
Average		4.48	1.33	1.04	1.04	0.97	0.99
Avg x hi / lo		3.17	1.27	1.01	1.00	0.97	0.98
Avg 3 Year		6.10	1.36	0.95	0.99	0.97	1.00
Avg 5 Year		7.60	1.30	0.95	0.98	0.97	0.99
Prior		1.50	1.23	1.01	0.96	0.98	0.98
Selected		1.50	1.30	0.99	0.99	0.97	0.99
Cumulative		1.84	1.23	0.95	0.95	0.96	0.99

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

Basis for Hurricane Loss Ratio	(1)	Indicated Loss Ratio (2)	LAE Factor (3)	Indicated Loss & LAE Ratio (4)
Industry Experience		41.5%	0.159	48.1%
<u>Hurricane Models</u>				
Verisk Model		71.1%	0.159	82.4%
RMS Model		58.3%	0.159	67.6%
IF Model		38.3%	0.159	44.4%
CoreLogic RQE Model		42.9%	0.159	49.7%
Average of Models		52.7%	0.159	61.1%

Notes:

(2) Exhibit 6, Sheet 1 & Exhibit 7, Sheet 1 - Sheet 4

(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 - 2022 -- Hurricane Years Only

Accident Year	Earned Premium at Current TWIA Rate Level (1)	Number of Hurricanes During the Year (2)	Hurricane Year Incurred Loss Ratio (3)	Per Hurricane Loss Ratio (4)	Net Trend Factor (5)
1970	53,332,058	1	43.3%	33.9%	
1971	57,612,751	1	97.0%	87.6%	
1980	64,012,158	1	60.0%	50.6%	
1983	37,553,182	1	384.3%	374.9%	
1986	48,392,653	1	7.9%	0.0%	
1989	76,691,720	2	6.9%	0.0%	
1999	175,855,164	1	8.1%	0.0%	
2003	200,738,407	1	20.9%	11.5%	
2005	265,866,745	1	153.5%	144.1%	
2007	345,796,968	1	16.1%	6.7%	1.59
2008	313,442,675	2	431.8%	211.2%	1.54
2017	202,697,790	1	485.0%	475.6%	1.09
2020	188,971,059	3	8.9%	0.0%	1.15
2021	196,394,417	1	12.5%	3.1%	1.05
Simple Average Loss Ratio Per Hurricane Year			124.0%	99.9%	
(6)	Selected Non-Hurricane Loss Ratio		9.4%		
(7a)	Average Hurricane Loss Ratio Per Hurricane		99.9%		
(7b)	Selected Avg Hurricane Loss Ratio Per Hurricane		99.9%		
(8)	Historical Hurricane Frequency				
	53.0-Year (1/1/1970 - 12/31/2022)		0.340	(1 Hurricane Every 2.9 years)	
	172-Year (1/1/1851 - 12/31/2022)		0.395	(1 Hurricane Every 2.5 years)	
	Selected Frequency		0.395	(1 Hurricane Every 2.5 years)	
(9)	Selected Net Trending Factor		1.050		
(10)	Indicated Hurricane Loss Ratio		39.5%		
(11)	Inflation Adjusted Indicated Hurricane Loss Ratio		41.5%		

Notes:

- (1) 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) = MAX((3)-(5),0)/(2)
- (5) Derived from current and previous year's Exhibit 2, Sheet 5
- (6) Exhibit 6, Sheet 2
- (7a) = Average of (4)
- (7b) Selected
- (8) Exhibit 9
- (9) Selected Net Trend Factor based on (5)
- (10) = (7b) * (8) Selected
- (11) = (9) * (10)

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

Industry Experience -- Commercial Extended Coverage
1970 - 2022

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	53,332,058	23,092,142	43.3%	H
1971	13,340,143	20,347,170	57,612,751	55,893,676	97.0%	H
1972	18,906,678	24,314,307	68,845,649	8,704,522	12.6%	
1973	21,737,541	23,257,532	65,853,404	3,837,493	5.8%	
1974	22,348,193	22,844,661	64,684,365	2,193,087	3.4%	
1975	24,396,629	24,958,305	70,669,121	3,943,412	5.6%	
1976	26,795,934	24,109,943	68,266,995	2,218,115	3.2%	
1977	30,910,821	27,119,226	76,787,741	1,898,346	2.5%	
1978	32,709,599	26,415,338	74,794,691	2,535,872	3.4%	
1979	31,306,685	24,514,306	69,411,943	4,535,147	6.5%	
1980	28,751,765	22,607,257	64,012,158	38,431,071	60.0%	H
1981	24,129,384	21,398,588	60,589,828	4,272,728	7.1%	
1982	18,505,004	17,523,231	49,616,804		3.4%	
1983	12,680,397	13,262,706	37,553,182		384.3%	H
1984	12,736,031	14,992,627	42,451,431		8.1%	
1985	15,169,575	16,422,895	46,501,216		4.0%	
1986	21,130,682	17,090,896	48,392,653		7.9%	H
1987	31,114,529	26,771,157	75,802,188		1.5%	
1988	25,065,531	24,117,319	68,287,879		8.9%	
1989	24,167,085	27,085,314	76,691,720		6.9%	H
1990	19,677,404	23,041,233	65,240,956		102.1%	
1991	21,794,680	25,534,881	72,301,688		53.6%	
1992	23,737,753	26,950,473	76,309,919		1.5%	
1993	21,990,182		71,537,276		6.0%	
1994	16,604,950		54,018,329		7.8%	
1995	32,374,229		105,318,098		18.3%	
1996	55,367,089		180,117,233		2.4%	
1997	53,196,024		173,054,441		3.7%	
1998	53,986,058		178,299,022		14.8%	
1999	52,435,243		175,855,164		8.1%	H
2000	41,739,697		133,956,823		6.7%	
2001	42,330,042		127,689,113		5.6%	
2002	69,156,402		199,609,188		14.2%	
2003	78,368,305		200,738,407		20.9%	H
2004	112,957,791		276,540,371		1.9%	
2005	119,598,806		265,866,745		153.5%	H
2006	148,019,940		299,356,477		2.1%	
2007	186,207,969		345,796,968		16.1%	H
2008	177,673,659		313,442,675		431.8%	H
2009	185,204,697		296,283,945		2.7%	
2010	193,721,394		286,320,340		3.7%	
2011	192,278,480		277,463,924		15.2%	
2012	209,676,871		287,748,652		17.9%	
2013	224,380,012		293,394,751		6.6%	
2014	234,738,939		292,656,252		1.4%	
2015	227,620,879		270,032,426		13.3%	
2016	211,042,655		238,412,001		3.9%	
2017	183,852,871		202,697,790		485.0%	H
2018	181,465,223		195,175,144		1.4%	
2019	176,440,243		185,262,255		2.5%	
2020	179,972,437		188,971,059		8.9%	H
2021	187,042,302		196,394,417		12.5%	H
2022	203,882,757		208,459,431		2.3%	
Total / Average	4,565,312,399		7,974,479,056		40.1%	
Average of Non-Hurricane Years					9.9%	
Average of Non-Hurricane Years Excluding 1991					8.8%	
Selected					9.4%	

Notes: (2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2021 are year ending 12/31/xx as of 12/31/22
(3) Provided by TDI (1992 MR = 1992 manual rates)
(4) 1993 - 2022: Sum of Exhibit 6, Sheet 4 - 7, (5); 1970 - 1992: (3) * 2.831, 1992 on-level factor to bring industry premium to TWIA current rate level
(5) Provided by TDI. 1970 - 1982 are year ending 9/30/xx as of 12/31/99; 1983 - 2022 are year ending 12/31/xx as of 12/31/22
(6) 1983 - 2022: Exhibit 6, Sheet 3; 1970 - 1982: (5) / (4)
(7) "H" indicates occurrence of hurricane(s) during the time period (years ending 12/31/xx)

<u>Loss Ratios by Territory / Tier</u>						
Accident Year	Territory 8	Territory 9	Territory 10	Tier 2	Weighted Loss Ratio	Dev Wtd Loss Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1983	961.4%	4.1%	44.7%	161.1%	384.3%	384.3%
1984	8.2%	4.1%	10.6%	15.4%	8.1%	8.1%
1985	4.0%	2.7%	4.7%	8.6%	4.0%	4.0%
1986	3.2%	1.1%	17.4%	13.6%	7.9%	7.9%
1987	0.5%	1.8%	2.2%	3.3%	1.5%	1.5%
1988	12.6%	3.7%	8.8%	5.2%	8.9%	8.9%
1989	14.6%	1.9%	2.1%	5.9%	6.9%	6.9%
1990	257.7%	2.7%	9.7%	7.4%	102.1%	102.1%
1991	23.3%	23.0%	109.3%	5.0%	53.6%	53.6%
1992	0.8%	1.1%	2.3%	4.1%	1.5%	1.5%
1993	12.9%	1.7%	1.7%	5.4%	6.0%	6.0%
1994	0.3%	3.5%	18.7%	7.5%	7.8%	7.8%
1995	7.4%	9.8%	35.8%	19.6%	18.3%	18.3%
1996	1.4%	2.7%	3.0%	6.3%	2.4%	2.4%
1997	5.0%	1.9%	3.4%	8.6%	3.7%	3.7%
1998	19.7%	13.1%	10.9%	8.6%	14.8%	14.8%
1999	2.6%	12.0%	11.1%	8.5%	8.1%	8.1%
2000	2.0%	1.9%	13.2%	56.1%	6.7%	6.7%
2001	6.7%	3.0%	5.4%	27.3%	5.6%	5.6%
2002	11.1%	29.8%	6.8%	9.2%	14.2%	14.2%
2003	2.4%	8.3%	48.9%	31.0%	20.9%	20.9%
2004	2.7%	0.6%	1.9%	3.0%	1.9%	1.9%
2005	63.4%	1.6%	359.9%	48.4%	153.5%	153.5%
2006	2.2%	1.0%	2.5%	5.6%	2.1%	2.1%
2007	1.5%	53.8%	5.6%	9.4%	16.1%	16.1%
2008	665.8%	34.6%	458.8%	465.7%	431.8%	431.8%
2009	2.4%	4.5%	1.5%	9.2%	2.7%	2.7%
2010	1.4%	4.4%	5.8%	3.2%	3.7%	3.7%
2011	3.7%	28.8%	17.7%	18.4%	15.2%	15.2%
2012	18.0%	22.9%	14.5%	10.0%	17.9%	17.9%
2013	13.6%	4.0%	0.9%	6.8%	6.6%	6.6%
2014	0.5%	3.2%	1.1%	4.3%	1.4%	1.4%
2015	11.5%	3.7%	21.9%	13.6%	13.3%	13.3%
2016	0.8%	7.4%	3.6%	31.1%	3.9%	3.9%
2017	77.0%	1191.0%	441.9%	125.0%	485.5%	485.0%
2018	0.3%	2.0%	1.7%	14.5%	1.4%	1.4%
2019	1.1%	0.8%	4.7%	17.4%	2.5%	2.5%
2020	2.5%	7.7%	15.1%	21.1%	8.6%	8.9%
2021	21.3%	0.3%	7.7%	22.9%	11.2%	12.5%
2022	2.2%	1.0%	1.2%	9.8%	1.7%	2.3%
Average	56.2%	37.7%	43.5%	31.4%	46.7%	46.8%

TWIA 2022 Written Premium by Territory / Tier

	Territory 8	Territory 9	Territory 10	Tier 2	Total
(8) Amount	34,021,878	22,336,222	31,966,858	1,288,623	89,613,581
(9) % Share	37.97%	24.93%	35.67%	1.44%	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) * loss development factors from Exhibit 2.2
- (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	3.829	2,741,514	26,357,425	961.4%
1984	1,195,339	1,366,667	3.511	3,869,700	318,455	8.2%
1985	2,581,481	2,777,593	2.879	7,864,719	314,878	4.0%
1986	3,013,362	2,349,181	2.050	6,651,676	211,282	3.2%
1987	3,004,153	2,585,122	1.994	7,319,740	37,480	0.5%
1988	2,905,355	2,728,206	2.147	7,724,880	969,836	12.6%
1989	2,825,114	3,015,974	2.385	8,539,692	1,244,199	14.6%
1990	2,303,321	2,474,141	2.506	7,005,499	18,053,460	257.7%
1991	2,203,500	2,080,579	2.491	5,891,133	1,371,244	23.3%
1992	2,352,391	2,012,473	2.831	5,698,292	46,331	0.8%
1993	2,406,016		3.253	7,827,122	1,005,945	12.9%
1994	2,807,090		3.253	9,131,874	28,034	0.3%
1995	2,645,757		3.253	8,607,034	635,625	7.4%
1996	5,519,716		3.253	17,956,443	249,644	1.4%
1997	5,461,636		3.253	17,767,500	886,485	5.0%
1998	6,133,105		3.303	20,255,723	3,994,564	19.7%
1999	6,706,028		3.354	22,490,401	575,316	2.6%
2000	4,997,201		3.209	16,037,710	320,131	2.0%
2001	4,785,262		3.017	14,434,804	962,576	6.7%
2002	8,206,069		2.886	23,685,541	2,632,325	11.1%
2003	8,793,047		2.561	22,523,165	529,845	2.4%
2004	12,425,339		2.448	30,419,397	830,387	2.7%
2005	13,839,253		2.220	30,718,239	19,469,845	63.4%
2006	18,414,310		2.037	37,507,901	812,370	2.2%
2007	24,924,710		1.857	46,286,360	710,669	1.5%
2008	24,970,117		1.764	44,050,988	293,310,706	665.8%
2009	29,363,002		1.600	46,973,895	1,140,669	2.4%
2010	31,708,901		1.478	46,865,775	669,882	1.4%
2011	31,323,614		1.443	45,200,965	1,675,264	3.7%
2012	35,165,008		1.372	48,258,464	8,709,842	18.0%
2013	37,582,814		1.308	49,142,525	6,670,061	13.6%
2014	38,169,853		1.247	47,587,529	255,745	0.5%
2015	36,704,758		1.186	43,543,786	5,027,267	11.5%
2016	36,091,835		1.130	40,772,452	331,694	0.8%
2017	32,229,276		1.102	35,532,777	27,347,012	77.0%
2018	32,052,459		1.076	34,474,062	110,422	0.3%
2019	31,282,533		1.050	32,846,660	369,052	1.1%
2020	32,437,926		1.050	34,059,822	864,411	2.5%
2021	32,931,814		1.050	34,578,405	7,366,017	21.3%
2022	37,475,436		1.022	38,316,669	838,443	2.2%
Total	650,851,766			1,011,160,832	437,254,838	43.2%

Notes:

(2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2020 are year ending 12/31/xx as of 12/31/22

(3) Provided by TDI (1992 MR = 1992 manual rates)

(4) Represents 8/1/80 through 6/30/22 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 83.4% of industry data in Tier 1 -- Territory 8

(5) = (3) * 2.831 for 1983 - 1992; (2) * (4) for 1993 - 2022

(6) 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 12/31/19
2011 - 2022 are year ending 12/31/xx as of 12/31/2022; 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	3.829	2,324,158	96,051	4.1%
1984	558,639	652,809	3.511	1,848,420	76,481	4.1%
1985	1,235,059	1,383,103	2.879	3,916,238	106,148	2.7%
1986	2,228,911	1,849,840	2.050	5,237,798	56,387	1.1%
1987	2,381,538	2,086,940	1.994	5,909,144	105,275	1.8%
1988	1,796,653	1,719,227	2.147	4,867,969	181,414	3.7%
1989	1,632,453	1,826,430	2.385	5,171,513	98,116	1.9%
1990	1,429,526	1,769,972	2.506	5,011,653	135,678	2.7%
1991	1,390,109	1,555,310	2.491	4,403,840	1,013,636	23.0%
1992	1,571,433	1,629,721	2.831	4,614,534	49,512	1.1%
1993	1,587,772		3.253	5,165,254	86,000	1.7%
1994	2,203,514		3.253	7,168,353	254,088	3.5%
1995	2,669,951		3.253	8,685,741	854,753	9.8%
1996	5,639,923		3.253	18,347,494	502,177	2.7%
1997	3,183,758		3.253	10,357,230	199,390	1.9%
1998	3,613,310		3.303	11,933,630	1,561,275	13.1%
1999	6,808,428		3.354	22,833,826	2,735,082	12.0%
2000	5,167,158		3.209	16,583,160	317,804	1.9%
2001	4,763,324		3.017	14,368,628	431,244	3.0%
2002	8,479,915		2.886	24,475,954	7,300,265	29.8%
2003	9,934,549		2.561	25,447,093	2,122,879	8.3%
2004	14,597,450		2.448	35,737,103	212,644	0.6%
2005	16,137,249		2.220	35,818,976	566,758	1.6%
2006	21,249,313		2.037	43,282,487	434,362	1.0%
2007	27,752,523		1.857	51,537,742	27,752,523	53.8%
2008	27,990,909		1.764	49,380,113	17,103,924	34.6%
2009	29,085,395		1.600	46,529,790	2,074,340	4.5%
2010	27,439,364		1.478	40,555,397	1,768,194	4.4%
2011	25,580,489		1.443	36,913,454	10,619,019	28.8%
2012	26,761,300		1.372	36,725,691	8,409,391	22.9%
2013	27,964,798		1.308	36,566,202	1,468,876	4.0%
2014	27,857,373		1.247	34,730,643	1,127,998	3.2%
2015	26,449,955		1.186	31,378,253	1,152,720	3.7%
2016	22,552,307		1.130	25,477,033	1,887,548	7.4%
2017	18,922,395		1.102	20,861,940	248,458,879	1191.0%
2018	17,985,941		1.076	19,344,801	387,950	2.0%
2019	16,008,766		1.050	16,809,204	141,982	0.8%
2020	15,636,712		1.050	16,418,548	1,257,240	7.7%
2021	16,595,164		1.050	17,424,922	54,035	0.3%
2022	21,812,063		1.022	22,301,691	216,718	1.0%
Total	497,401,374			826,465,620	343,378,756	41.5%

Notes:

(2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2020 are year ending 1/0/xx as of 12/31/22

(3) Provided by TDI (1992 MR = 1992 manual rates)

(4) Represents 8/1/80 through 6/30/22 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 85.9% of industry data in Tier 1 -- Territory 9

(5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2022

(6) 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 12/31/19
2012 - 2022 are year ending 12/31/xx as of 12/31/2022

(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	3.829	11,720,839	5,242,728	44.7%
1984	4,835,650	5,883,059	3.511	16,657,806	1,759,233	10.6%
1985	3,637,366	3,997,227	2.879	11,318,097	534,724	4.7%
1986	4,787,352	3,948,102	2.050	11,179,000	1,943,819	17.4%
1987	5,996,981	5,352,970	1.994	15,156,866	338,938	2.2%
1988	5,872,305	5,768,621	2.147	16,333,776	1,442,599	8.8%
1989	5,125,436	5,918,163	2.385	16,757,203	349,413	2.1%
1990	3,842,130	4,624,825	2.506	13,095,133	1,263,817	9.7%
1991	4,253,902	4,765,878	2.491	13,494,522	14,752,702	109.3%
1992	4,034,147	4,187,015	2.831	11,855,479	276,158	2.3%
1993	4,540,606		3.253	14,771,255	245,603	1.7%
1994	5,145,260		3.253	16,738,283	3,130,886	18.7%
1995	9,324,050		3.253	30,332,497	10,852,486	35.8%
1996	15,331,047		3.253	49,874,137	1,478,175	3.0%
1997	17,116,368		3.253	55,682,047	1,911,482	3.4%
1998	17,623,413		3.303	58,204,607	6,340,723	10.9%
1999	15,019,386		3.354	50,371,400	5,614,569	11.1%
2000	11,756,138		3.209	37,729,428	4,969,254	13.2%
2001	11,140,104		3.017	33,604,266	1,824,700	5.4%
2002	20,528,832		2.886	59,253,278	4,053,342	6.8%
2003	23,885,668		2.561	61,182,527	29,908,218	48.9%
2004	31,412,192		2.448	76,902,524	1,462,655	1.9%
2005	34,104,704		2.220	75,700,360	272,418,664	359.9%
2006	46,246,638		2.037	94,199,258	2,315,133	2.5%
2007	71,922,575		1.857	133,563,609	7,479,422	5.6%
2008	66,558,177		1.764	117,418,492	538,764,477	458.8%
2009	64,583,344		1.600	103,318,157	1,576,316	1.5%
2010	63,606,679		1.478	94,010,711	5,423,427	5.8%
2011	63,551,427		1.443	91,706,718	16,247,025	17.7%
2012	68,482,322		1.372	93,981,257	13,608,787	14.5%
2013	71,237,559		1.308	93,148,787	882,597	0.9%
2014	66,691,855		1.247	83,146,786	892,615	1.1%
2015	61,267,612		1.186	72,683,323	15,887,126	21.9%
2016	56,207,168		1.130	63,496,469	2,289,194	3.6%
2017	44,762,462		1.102	49,350,614	218,068,882	441.9%
2018	41,494,725		1.076	44,629,702	741,880	1.7%
2019	39,637,988		1.050	41,619,887	1,958,323	4.7%
2020	39,584,894		1.050	41,564,139	6,286,600	15.1%
2021	39,999,421		1.050	41,999,392	3,221,365	7.7%
2022	44,814,513		1.022	45,820,490	549,637	1.2%
Total	1,213,732,384			2,063,573,121	1,208,307,694	58.6%

Notes:

(2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2022 are year ending 12/31/xx as of 12/31/22

(3) Provided by TDI (1992 MR = 1992 manual rates)

(4) Represents 8/1/80 through 6/30/22 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 66.1% of industry data in Tier 1 -- Territory 10

(5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2022

(6) 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 12/31/19
2012 - 2022 are year ending 12/31/xx as of 12/31/2022

(7) = (6) / (5)

Industry experience is for EC, where wind and hail related loss is predominant

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	3.829	20,766,671	33,451,768	161.1%
1984	6,146,403	7,090,092	3.511	20,075,505	3,096,573	15.4%
1985	7,715,669	8,264,972	2.879	23,402,162	2,019,280	8.6%
1986	11,101,057	8,943,773	2.050	25,324,179	3,439,343	13.6%
1987	19,731,857	16,746,125	1.994	47,416,438	1,552,595	3.3%
1988	14,491,218	13,901,265	2.147	39,361,254	2,041,063	5.2%
1989	14,584,082	16,324,747	2.385	46,223,312	2,746,147	5.9%
1990	12,102,427	14,172,295	2.506	40,128,672	2,967,816	7.4%
1991	13,947,169	17,133,114	2.491	48,512,193	2,440,246	5.0%
1992	15,779,782	19,121,264	2.831	54,141,614	2,232,412	4.1%
1993	13,455,788		3.253	43,773,645	2,357,383	5.4%
1994	6,449,086		3.253	20,979,819	1,579,205	7.5%
1995	17,734,471		3.253	57,692,826	11,314,057	19.6%
1996	28,876,403		3.253	93,939,159	5,938,855	6.3%
1997	27,434,262		3.253	89,247,664	7,691,121	8.6%
1998	26,616,230		3.303	87,905,062	7,574,576	8.6%
1999	23,901,401		3.354	80,159,537	6,821,707	8.5%
2000	19,819,200		3.209	63,606,525	35,670,537	56.1%
2001	21,641,352		3.017	65,281,415	17,852,673	27.3%
2002	31,941,586		2.886	92,194,415	8,461,924	9.2%
2003	35,755,041		2.561	91,585,622	28,411,179	31.0%
2004	54,522,810		2.448	133,481,347	3,982,223	3.0%
2005	55,697,704		2.220	123,629,170	59,821,556	48.4%
2006	61,057,252		2.037	124,366,831	6,946,289	5.6%
2007	61,608,161		1.857	114,409,257	10,794,322	9.4%
2008	58,154,456		1.764	102,593,082	477,796,637	465.7%
2009	62,172,956		1.600	99,462,103	9,127,735	9.2%
2010	70,966,450		1.478	104,888,457	3,378,802	3.2%
2011	71,822,950		1.443	103,642,787	19,035,462	18.4%
2012	79,268,241		1.372	108,783,240	10,920,914	10.0%
2013	87,594,841		1.308	114,537,237	7,837,537	6.8%
2014	102,019,858		1.247	127,191,294	5,452,840	4.3%
2015	103,198,554		1.186	122,427,064	16,625,378	13.6%
2016	96,191,345		1.130	108,666,047	33,773,939	31.1%
2017	87,938,738		1.102	96,952,459	121,189,793	125.0%
2018	89,932,098		1.076	96,726,579	14,008,395	14.5%
2019	89,510,956		1.050	93,986,504	16,313,767	17.4%
2020	92,312,905		1.050	96,928,550	20,497,133	21.1%
2021	97,515,903		1.050	102,391,698	23,461,302	22.9%
2022	99,780,745		1.022	102,020,581	9,985,883	9.8%
Total	1,897,741,966			3,228,801,975	1,060,610,367	32.8%

Notes:

(2) Provided by TDI. 1983 - 1995 are year ending 9/30/xx as of 12/31/99; 1996 - 2022 are year ending 12/31/xx as of 12/31/22

(3) Provided by TDI (1992 MR = 1992 manual rates)

(4) Represents 8/1/80 through 6/30/22 rate changes for TWIA; factors assume uniform earning of written premium and that TWIA premium represents 0.8% of industry data in Tier 2

(5) = (3) * (4) for 1983 - 1992; (2) * (4) for 1993 - 2022

(6) 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 12/31/19
2012 - 2022 are year ending 12/31/xx as of 12/31/2022

(7) = (6) / (5)

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

County	TWIA Insured Values (000s) as of 11/30/22	Modeled Loss Cost	Expected Annual Hurricane Loss
(1)	(2)	(3)	(4)
Aransas	334,112	3.972	1,327,093
Brazoria	460,868	3.560	1,640,690
Calhoun	131,888	4.232	558,150
Cameron	1,232,168	4.332	5,337,752
Chambers	66,075	3.101	204,899
Galveston	3,140,711	9.690	30,433,490
Harris	123,247	4.319	532,304
Jefferson	498,050	3.027	1,507,597
Kenedy	694	1.348	936
Kleberg	22,737	1.205	27,398
Matagorda	103,140	4.927	508,171
Nueces	2,453,934	4.366	10,713,876
Refugio	18,577	1.862	34,590
San Patricio	133,728	2.828	378,183
Willacy	19,550	3.017	58,982
Total	8,739,479	6.095	53,264,111
(5) In-Force Premium as of 11/30/22 at Present Rates			74,882,663
(6) Indicated Hurricane Loss Ratio			71.1%

Notes:

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

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

County	TWIA Insured Values (000s) as of 11/30/22	Modeled Loss Cost	Expected Annual Hurricane Loss
(1)	(2)	(3)	(4)
Aransas	334,112	3.712	1,240,224
Brazoria	460,868	3.627	1,671,568
Calhoun	131,888	4.726	623,303
Cameron	1,232,168	5.087	6,268,039
Chambers	66,075	3.016	199,282
Galveston	3,140,711	6.465	20,304,697
Harris	123,247	3.851	474,624
Jefferson	498,050	2.741	1,365,155
Kenedy	694	2.318	1,609
Kleberg	22,737	2.004	45,565
Matagorda	103,140	4.078	420,605
Nueces	2,453,934	4.271	10,480,752
Refugio	18,577	2.931	54,449
San Patricio	133,728	3.286	439,430
Willacy	19,550	3.819	74,661
Total	8,739,479	4.996	43,663,963
(5) In-Force Premium as of 11/30/22 at Present Rates			74,882,663
(6) Indicated Hurricane Loss Ratio			58.3%

Notes:

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

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

County	TWIA Insured Values (000s) as of 11/30/22	Modeled Loss Cost	Expected Annual Hurricane Loss
(1)	(2)	(3)	(4)
Aransas	334,112	2.723	909,787
Brazoria	460,868	3.005	1,384,908
Calhoun	131,888	3.333	439,583
Cameron	1,232,168	3.782	4,660,059
Chambers	66,075	2.673	176,618
Galveston	3,140,711	3.691	11,592,364
Harris	123,247	2.253	277,675
Jefferson	498,050	1.962	977,174
Kenedy	694	2.419	1,679
Kleberg	22,737	1.808	41,108
Matagorda	103,140	3.913	403,587
Nueces	2,453,934	3.014	7,396,157
Refugio	18,577	2.597	48,244
San Patricio	133,728	2.498	334,053
Willacy	19,550	3.022	59,080
Total	8,739,479	3.284	28,702,076
(5) In-Force Premium as of 11/30/22 at Present Rates			74,882,663
(6) Indicated Hurricane Loss Ratio			38.3%

Notes:

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

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

County	TWIA Insured Values (000s) as of 11/30/22	Modeled Loss Cost	Expected Annual Hurricane Loss
(1)	(2)	(3)	(4)
Aransas	334,112	3.182	1,063,144
Brazoria	460,868	2.747	1,266,004
Calhoun	131,888	3.468	457,388
Cameron	1,232,168	2.813	3,466,089
Chambers	66,075	2.584	170,738
Galveston	3,140,711	5.017	15,756,947
Harris	123,247	4.623	569,771
Jefferson	498,050	3.590	1,788,000
Kenedy	694	1.513	1,050
Kleberg	22,737	1.279	29,081
Matagorda	103,140	3.596	370,891
Nueces	2,453,934	2.777	6,814,575
Refugio	18,577	2.272	42,207
San Patricio	133,728	2.151	287,649
Willacy	19,550	2.436	47,624
Total	8,739,479	3.677	32,131,158
(5) In-Force Premium as of 11/30/22 at Present Rates			74,882,663
(6) Indicated Hurricane Loss Ratio			42.9%

Notes:

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

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

Verisk (AIR) Simulated Hurricane Results

County	TWIA Insured Values (000s) as of 11/30/22	Average Annual Modeled Loss	Modeled Loss Cost
(1)	(2)	(3)	(4)
Aransas	334,112	1,327,128	3.972
Brazoria	460,868	1,640,521	3.560
Calhoun	131,888	558,142	4.232
Cameron	1,232,168	5,337,849	4.332
Chambers	66,075	204,909	3.101
Galveston	3,140,711	30,433,646	9.690
Harris	123,247	532,286	4.319
Jefferson	498,050	1,507,700	3.027
Kenedy	694	935	1.348
Kleberg	22,737	27,401	1.205
Matagorda	103,140	508,219	4.927
Nueces	2,453,934	10,712,796	4.366
Refugio	18,577	34,597	1.862
San Patricio	133,728	378,129	2.828
Willacy	19,550	58,992	3.017
Total	8,739,479	53,263,250	6.095

Notes:

- (2) Provided by TWIA and Geo-coded by Verisk
- (3) Provided by Verisk Using Historical Event Frequencies and Excluding Storm Surge
- (4) = (3) / (2)

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

County	TWIA Insured Values (000s) as of 11/30/22	Average Annual Modeled Loss	Modeled Loss Cost
(1)	(2)	(3)	(4)
Aransas	334,112	1,240,175	3.712
Brazoria	460,868	1,671,477	3.627
Calhoun	131,888	623,292	4.726
Cameron	1,232,168	6,268,647	5.087
Chambers	66,075	199,282	3.016
Galveston	3,140,711	20,303,972	6.465
Harris	123,247	474,648	3.851
Jefferson	498,050	1,365,264	2.741
Kenedy	694	1,609	2.318
Kleberg	22,737	45,572	2.004
Matagorda	103,140	420,603	4.078
Nueces	2,453,934	10,481,482	4.271
Refugio	18,577	54,444	2.931
San Patricio	133,728	439,387	3.286
Willacy	19,550	74,669	3.819
Total	8,739,479	43,664,522	4.996

Notes:

- (2) Provided by TWIA and Geo-coded by RMS
- (3) Provided by RMS Using Historical Event Frequencies and Excluding Storm Surge
- (4) = (3) / (2)

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

Exhibit 8
Sheet 3

County	TWIA Insured Values (000s) as of 11/30/22	Average Annual Modeled Loss	Modeled Loss Cost
(1)	(2)	(3)	(4)
Aransas	334,112	909,829	2.723
Brazoria	460,868	1,384,988	3.005
Calhoun	131,888	439,632	3.333
Cameron	1,232,168	4,660,043	3.782
Chambers	66,075	176,613	2.673
Galveston	3,140,711	11,592,308	3.691
Harris	123,247	277,681	2.253
Jefferson	498,050	977,004	1.962
Kenedy	694	1,679	2.419
Kleberg	22,737	41,112	1.808
Matagorda	103,140	403,605	3.913
Nueces	2,453,934	7,395,286	3.014
Refugio	18,577	48,253	2.597
San Patricio	133,728	334,046	2.498
Willacy	19,550	59,073	3.022
Total	8,739,479	28,701,151	3.284

Notes:

(2) Provided by TWIA and Geo-coded by Impact Forecasting

(3) Provided by Impact Forecasting Using Historical Event Frequencies and Excluding Storm Surge

(4) = (3) / (2)

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

Exhibit 8
Sheet 4

County	TWIA Insured Values (000s) as of 11/30/22	Average Annual Modeled Loss	Modeled Loss Cost
(1)	(2)	(3)	(4)
Aransas	334,112	1,063,257	3.182
Brazoria	460,868	1,266,110	2.747
Calhoun	131,888	457,366	3.468
Cameron	1,232,168	3,466,591	2.813
Chambers	66,075	170,707	2.584
Galveston	3,140,711	15,757,646	5.017
Harris	123,247	569,770	4.623
Jefferson	498,050	1,788,184	3.590
Kenedy	694	1,050	1.513
Kleberg	22,737	29,084	1.279
Matagorda	103,140	370,879	3.596
Nueces	2,453,934	6,815,633	2.777
Refugio	18,577	42,205	2.272
San Patricio	133,728	287,656	2.151
Willacy	19,550	47,627	2.436
Total	8,739,479	32,133,764	3.677

Notes:

(2) Provided by TWIA and Geo-coded by RQE

(3) Provided by CoreLogic RQE Using Historical Event Frequencies and Excluding Storm Surge

(4) = (3) / (2)

Texas Windstorm Insurance Association
Commercial Property - Wind & Hail
Rate Level Review
Texas Hurricanes 1850 - 2022

<u>Landfall</u>			<u>Landfall</u>		
Year	Month	Name	Year	Month	Name
(1)	(2)		(1)	(2)	
1851	Jun		1933	Sep	
1854	Jun		1934	Jul	
1854	Sep	"Matagorda"	1936	Jun	
1865	Sep	"Sabine River-Lake Calcasieu"	1940	Aug	
1866	Jul		1941	Sep	
1867	Oct	"Galveston"	1942	Aug	
1869	Aug	"Lower Texas Coast"	1942	Aug	
1875	Sep		1943	Jul	
1879	Aug		1945	Aug	
1880	Aug		1947	Aug	
1882	Sep		1949	Oct	
1886	Jun		1957	Jun	Audrey
1886	Aug	"Indianola"	1959	Jul	Debra
1886	Sep		1961	Sep	Carla
1886	Oct		1963	Sep	Cindy
1887	Sep		1967	Sep	Beulah
1888	Jun		1970	Aug	Celia
1891	Jul		1971	Sep	Fern
1895	Aug		1980	Aug	Allen
1897	Sep		1983	Aug	Alicia
1900	Sep	"Galveston"	1986	Jun	Bonnie
1909	Jun		1989	Aug	Chantal
1909	Jul	"Velasco"	1989	Oct	Jerry
1909	Aug		1999	Aug	Bret
1910	Sep		2003	Jul	Claudette
1912	Oct		2005	Sep	Rita
1913	Jun		2007	Sep	Humberto
1915	Aug	"Galveston"	2008	Jul	Dolly
1916	Aug		2008	Sep	Ike
1919	Sep		2017	Aug	Harvey
1921	Jun		2020	Jul	Hanna
1929	Jun		2020	Aug	Laura
1932	Aug	"Freeport"	2020	Oct	Delta
1933	Aug		2021	Sep	Nicholas

Frequency	Date Period	Hurricanes	Period	Annual Frequency
53.0-Year	1/1/1970 - 12/31/2022	18	53	0.340
172-Year	1/1/1851 - 12/31/2022	68	172	0.395

Notes:
(1), (2) from NOAA Technical Memorandum NWS-NHC-6, updated with actual experience through 2022

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)
1994	10,672,677	3.253	34,718,218	34,718,218
1995	12,865,905	3.253	41,852,789	38,285,504
1996	15,640,660	3.253	50,879,067	46,365,928
1997	16,536,186	3.253	53,792,213	52,335,640
1998	16,558,977	3.353	55,522,250	54,657,232
1999	17,394,142	3.353	58,322,558	56,922,404
2000	17,332,561	3.077	53,332,290	55,827,424
2001	17,544,251	2.958	51,895,894	52,614,092
2002	24,013,525	2.818	67,670,113	59,783,004
2003	29,220,514	2.562	74,862,957	71,266,535
2004	31,009,323	2.329	72,220,713	73,541,835
2005	35,740,174	2.117	75,661,948	73,941,331
2006	76,847,840	1.964	150,929,158	113,295,553
2007	110,951,718	1.800	199,713,092	175,321,125
2008	98,036,118	1.715	168,131,943	183,922,518
2009	111,269,573	1.494	166,236,742	167,184,343
2010	102,174,680	1.477	150,912,002	158,574,372
2011	100,017,021	1.407	140,723,949	145,817,976
2012	110,524,397	1.340	148,102,691	144,413,320
2013	112,904,624	1.276	144,066,300	146,084,496
2014	104,642,688	1.215	127,140,866	135,603,583
2015	98,715,934	1.158	114,313,052	120,726,959
2016	88,278,690	1.103	97,371,395	105,842,224
2017	70,749,081	1.103	78,036,236	87,703,816
2018	65,696,833	1.050	68,981,675	73,508,956
2019	59,123,729	1.050	62,079,915	65,530,795
2020	60,327,052	1.050	63,343,405	62,711,660
2021	63,366,551	1.050	66,534,879	64,939,142
2022	88,784,127	1.000	88,784,127	77,659,503
Total	1,766,939,550		2,726,132,437	2,699,099,488

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 2002 and prior and monthly for 2003 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		Factor to Current Rate Level			
	Applicable Rates			E.O.Y.	B.O.Y.		E.O.Y.	B.O.Y.	E.O.Y.	Level				
(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	4.869
1981	8/1/1980			9/1/1981	1.175			1.132	8.0			4.0	1.161	4.500
1982	9/1/1981			9/1/1982	1.132			1.428	8.0			4.0	1.231	4.244
1983	9/1/1982			10/10/1983	1.428			1.514	9.3			2.7	1.447	3.610
1984	10/10/1983			10/10/1983	1.514			1.514	12.0			0.0	1.514	3.451
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	2.290
1986	11/15/1985			11/15/1985	2.651			2.651	12.0			0.0	2.651	1.971
1987	11/15/1985			7/1/1987	2.651			2.407	6.0			6.0	2.529	2.066
1988	7/1/1987			11/1/1988	2.407			2.075	10.0			2.0	2.352	2.221
1989	11/1/1988			11/1/1988	2.075			2.075	12.0			0.0	2.075	2.518
1990	11/1/1988			3/1/1990	2.075			2.104	2.0			10.0	2.099	2.489
1991	3/1/1990			4/1/1991	2.104			2.083	3.0			9.0	2.088	2.502
1992	1/1/1992			1/1/1992	1.606			1.606	12.0			0.0	1.606	3.253
1993	1/1/1992			10/1/1993	1.606			1.606	9.0			3.0	1.606	3.253
1994	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.253
1995	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.253
1996	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.253
1997	10/1/1993			10/1/1993	1.606			1.606	12.0			0.0	1.606	3.253
1998	1/1/1998			1/1/1998	1.558			1.558	12.0			0.0	1.558	3.353
1999	1/1/1998			1/1/1998	1.558			1.558	12.0			0.0	1.558	3.353
2000	1/1/2000			1/1/2000	1.698			1.698	12.0			0.0	1.698	3.077
2001	1/1/2001			1/1/2001	1.766			1.766	12.0			0.0	1.766	2.958
2002	1/1/2002			1/1/2002	1.854			1.854	12.0			0.0	1.854	2.818
2003	1/1/2003			1/1/2003	2.039			2.039	12.0			0.0	2.039	2.562
2004	1/1/2004			1/1/2004	2.243			2.243	12.0			0.0	2.243	2.329
2005	1/1/2005			1/1/2005	2.468			2.468	12.0			0.0	2.468	2.117
2006	1/1/2006			9/1/2006	2.591			2.798	8.0			4.0	2.660	1.964
2007	1/1/2007			1/1/2007	2.902			2.902	12.0			0.0	2.902	1.800
2008	1/1/2007			2/1/2008	2.902			3.059	1.0			11.0	3.046	1.715
2009	2/1/2008			2/1/2009	3.059			3.536	1.0			11.0	3.496	1.494
2010	2/1/2009			2/1/2009	3.536			3.536	12.0			0.0	3.536	1.477
2011	1/1/2011			1/1/2011	3.713			3.713	12.0			0.0	3.713	1.407
2012	1/1/2012			1/1/2012	3.898			3.898	12.0			0.0	3.898	1.340
2013	1/1/2013			1/1/2013	4.093			4.093	12.0			0.0	4.093	1.276
2014	1/1/2014			1/1/2014	4.298			4.298	12.0			0.0	4.298	1.215
2015	1/1/2015			1/1/2016	4.513			4.513	12.0			0.0	4.513	1.158
2016	1/1/2016			1/1/2017	4.738			4.738	12.0			0.0	4.738	1.103
2017	1/1/2017			1/1/2018	4.738			4.738	12.0			0.0	4.738	1.103
2018	1/1/2018			1/1/2019	4.975			4.975	12.0			0.0	4.975	1.050
2019	1/1/2019			1/1/2019	4.975			4.975	12.0			0.0	4.975	1.050
2020	1/1/2020			1/1/2020	4.975			4.975	12.0			0.0	4.975	1.050
2021	1/1/2021			1/1/2021	4.975			4.975	12.0			0.0	4.975	1.050
2022	1/1/2022			1/1/2022	5.224			5.224	12.0			0.0	5.224	1.000
Current								5.224				5.224	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
1/1/20	0.0%	4.975
1/1/21	0.0%	4.975
1/1/22	5.0%	5.224
1/1/23	0.0%	5.224

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	2020	2021	2022	Selected
(1) Direct Written Premium	\$369,600,488	\$395,112,773	\$518,299,032	
(2) Direct Earned Premium	\$369,179,093	\$378,504,197	\$443,490,204	
(3) Commission				
\$ Amount	59,103,153	63,161,029	82,854,389	
% 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	\$31,624,678	\$29,979,903	\$35,578,580	
Adjustments				
Contribution to Statutory Fund	0	0	0	
Adjusted \$ Amount	31,624,678	29,979,903	35,578,580	
% of DWP	8.6%	7.6%	6.9%	7.5%
(6) Taxes, Licenses & Fees				
\$ Amount	\$6,904,349	\$7,364,210	\$9,499,183	
% of DWP	1.9%	1.9%	1.8%	1.9%
(7) Reinsurance Expense				26.4%
(8) Outstanding Class 1 Public Security Repayment				0.0%
(9) Total Fixed Expenses				33.9%
(10) Total Variable Expenses				17.9%
(11) CRTF Contribution & UW Contingency & Uncertainty				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 principal paid off in 2022
- (9) = (5) + (7) + (8)
- (10) = (3) + (4) + (6)
- (11) CRTF contribution selected judgmentally
- (12) = 100% - (10) - (11)

Texas Windstorm Insurance Association

Commercial Property - Wind & Hail

Rate Level Review

Development of Reinsurer Expense

Using Average of Verisk and RMS Hurricane Models

Exhibit 11

Sheet 2

	Combined	Residential	Commercial
(1) 2023 - 2024 Reinsurance Premium	189,725,117	154,114,999	35,610,118
(2a) Average Annual Loss by Reinsurance Layer (Verisk) 100% of \$2243M XS \$2265M	41,761,157	33,855,119	7,906,039
Total	41,761,157	33,855,119	7,906,039
(2b) Average Annual Loss by Reinsurance Layer (RMS) 100% of \$2243M XS \$2265M	28,675,634	23,361,165	5,314,470
Total	28,675,634	23,361,165	5,314,470
(2c) Selected Total Average Annual Loss	35,218,396	28,608,142	6,610,254
(3) Annual Exposure Growth	19.7%	19.7%	19.7%
(4) Prospective Average Annual Loss	42,158,011	34,245,238	7,912,773
(5) Net Cost of Reinsurance	140,863,982	114,424,768	26,439,215
(6) TWIA 2022 Earned Premium at Present Rates	455,161,457	377,501,954	77,659,503
(7) 2023 - 2024 TWIA Prospective Earned Premium at Present Rates	587,283,942	487,081,742	100,202,199
(8) Indicated Reinsurance Expense %	24.0%	23.5%	26.4%

Notes:

(1) From TWIA reinsurance contract effective 6/1/2023 through 5/31/2024

(2a) Provided by Aon, based on Verisk model using TWIA exposures as of 11/30/2022

(2b) Provided by Aon, based on RMS model using TWIA exposures as of 11/30/2022

(2c) Selected equal to the average of the modeled average annual losses

(3) Selected based on projections communicated to reinsurers

(4) = (2c) * [(1+ (3)) ^ 1.000] (projected exposure growth from 11/30/2022 to 12/1/2023)

(5) = (1) - (4) * 1.159. 1.159 is the LAE loading.

(6) = Commercial Exhibit 10, Sheet 1 + Residential Exhibit 10, Sheet 2, calendar year ending 12/31/2022

(7) = (6) adjusted for exposure growth trend * [(1+ (3)) ^ 1.417] (projected exposure growth from 7/1/2022 to 12/1/2023)

(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)
2008	857,250,899	1,709,221,198	2,566,472,097	2,562,744,000	3,728,097
2009	2,553,456	8,479,585	11,033,041	10,403,000	630,041
2010	7,478,289	10,958,718	18,437,007	18,005,000	432,007
2011	19,217,587	76,982,258	96,199,845	96,073,000	126,845
2012	14,459,642	52,352,045	66,811,687	66,741,000	70,687
2013	7,351,329	63,532,058	70,883,387	70,836,000	47,387
2014	1,056,281	6,098,077	7,154,358	7,005,000	149,358
2015	18,718,279	120,286,469	139,004,748	138,697,000	307,748
2016	2,551,122	25,645,895	28,197,017	28,422,000	(224,983)
2017	468,420,772	932,622,203	1,401,042,975	1,400,645,000	397,975
2018	251,357	11,852,645	12,104,002	12,087,000	17,002
2019	941,867	16,646,543	17,588,410	17,588,000	410
2020	6,333,803	56,407,146	62,740,949	62,616,000	124,949
2021	7,332,387	55,574,802	62,907,189	61,894,000	1,013,189
2022	841,111	18,066,308	18,907,419	19,961,000	(1,053,581)
Total	1,414,758,181	3,164,725,950	4,579,484,131	4,573,717,000	5,767,131

Notes:

- (2), (3) Provided by TWIA, as of 12/31/2022
- (4) = (2) + (3)
- (5) Based on TWIA 2022 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)
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	98,036,118	232,925,990	330,962,108	331,057,645	(95,537)
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
2020	60,327,052	310,312,753	370,639,805	369,600,488	1,039,317
2021	63,366,551	331,736,850	395,103,401	395,112,773	(9,372)
2022	88,784,127	429,663,068	518,447,195	518,299,032	148,163
Total	1,766,939,550	5,838,076,896	7,605,016,446	7,600,411,738	4,604,708

Notes:

- (2), (3) Provided by TWIA, as of 12/31/2022
- (4) = (2) + (3)
- (5) Based on TWIA Annual Statements
- (6) = (4) - (5)