Texas Windstorm Insurance Association
Willis Towers Watson Report
PML Determination v November 2020

Cat model approach for reinsurance and rate filings

		Column A	Column B	Column C	B - A	C - B	C - A
Metric	Hurricane Loss and LAE Ratio (HuLR)[1] or Reinsurance Spend part of Fixed Expenses[2]	TWIA's Current Approach[3]	WTW Recommendation Pre-Data Quality "Original"	WTW Recommendation With Data Quality "Revised"	TWIA Current Approach vs WTW Recommendation Pre-Data Quality "Original"	Pre-Data Quality vs With Data Quality Original vs Revised	Pre-Data Quality vs With Data Quality Revised vs TWIA Current
Model Weight (RMS/AIR)	Both	50% / 50%	75% / 25%	75% / 25%			
Long-term / Medium-term	Both	Medium term	Long term	Long term			
Loss Adjustment Expense	Both	15% load	17.2% load[5]	17.2% load[5]			
Storm Surge (flood)	HuLR	10% load on AAL	excluded	excluded			
	Reinsurance	excluded	excluded	excluded			
1-100 yr (11/30/19 data)	Reinsurance	3,600,000,000	3,180,000,000	2,997,136,072	(420,000,000)	(182,863,928)	(602,863,928)
LAE Load		15.00%	17.20%	17.20%	2.20%	0.00%	2.20%
1-100 yr w/ LAE (rounded)		4,200,000,000	3,740,000,000	3,515,000,000	(460,000,000)	(225,000,000)	(685,000,000)
Assumed Reinsurance Limit (2020)		2,100,000,000	1,640,000,000	1,415,000,000	(460,000,000)	(225,000,000)	(685,000,000)
Assumed Reinsurance Retention (2020)		2,100,000,000	2,100,000,000	2,100,000,000			
2020 Net Reinsurance Spend $[4]		102,066,436	85,227,815	76,000,000	(16,838,621)	(9,227,815)	(26,066,436)
2020 Reinsurance Cost % for Rate Indication	Residential	18.7%	15.8%	13.1%	-2.9%	-2.7%	-5.6%
	Commercial	18.7%	17.9%	20.3%	-0.8%	2.4%	1.6%
2019 Earned Premium at Present Rates		384,669,667	384,669,667	384,669,667			
				Assumed upper limit ROL	*3.66%*	*4.10%*	*3.81%*

[1] Hurricane Loss and LAE Ratio found in Indication Exhibit 5

[2] Reinsurance Spend as a part of Fixed Expenses found in Indication Exhibit 11

[3] This figure represents the methodology TWIA is currently using and the actual limit purchased.

[4] Current Net Spend = 107,500,000 gross spend less broker discount, depopulation policies and applicable commissions. See Indication Exhibit 11.2

[5] Details on the calculation of the Loss Adjustment Expense for the HuLR can be found in Indication Exhibit 4.2

Texas Windstorm Insurance Association
Willis Towers Watson Report
Gross Hurricane AAL for Rate Filing - Summary

Willis Re "Original" Pre-Data Quality - October 2020

	Residential	Commercial
Hurricane Modeled Loss Cost - RMS	132,551,714	29,464,129
LAE Assumption	17.20%	17.20%
Hurricane Modeled Loss Cost w/ LAE - RMS	155,350,609	34,531,959
Hurricane Modeled Loss Cost w/ LAE %- RMS	49.68%	59.80%
Hurricane Modeled Loss Cost - AIR	163,908,226	32,211,971
LAE Assumption	17.20%	17.20%
Hurricane Modeled Loss Cost w/ LAE - AIR	192,100,441	37,752,430
Hurricane Modeled Loss Cost w/ LAE %- AIR	61.44%	65.38%
Hurricane Modeled Loss Cost w/ LAE - 75% / 25%	164,538,067	35,337,077
Inforce Premium 11/30/19 at Present Rates	312,674,278	57,743,025
Hurricane Modeled Loss Cost w/ LAE Selection - 75% / 25%	52.62%	61.20%

Data as of Nov 30, 2019
RMS RiskLink v18.1 and AIR Touchstone v7
Hurricane exclude storm surge
All losses include demand surge where applicable

Willis Re "Revised" With Data Quality - November 2020

	Residential	Commercial
Hurricane Modeled Loss Cost - RMS	122,397,965	28,669,579
LAE Assumption	17.20%	17.20%
Hurricane Modeled Loss Cost w/ LAE - RMS	143,450,415	33,600,747
Hurricane Modeled Loss Cost w/ LAE %- RMS	45.88%	58.19%
Hurricane Modeled Loss Cost - AIR	156,209,857	31,876,174
LAE Assumption	17.20%	17.20%
Hurricane Modeled Loss Cost w/ LAE - AIR	183,077,952	37,358,876
Hurricane Modeled Loss Cost w/ LAE %- AIR	58.55%	64.70%
Hurricane Modeled Loss Cost w/ LAE - 75% / 25%	153,357,299	34,540,279
Inforce Premium 11/30/19 at Present Rates	312,674,278	57,743,025
Hurricane Modeled Loss Cost w/ LAE Selection - 75% / 25%	49.05%	59.82%

Data as of Nov 30, 2019
RMS RiskLink v18.1 and AIR Touchstone v7
Hurricane exclude storm surge
All losses include demand surge where applicable

Texas Windstorm Insurance Association
Willis Towers Watson Report
Exhibit 11 - Reinsurance Summary

Willis Re "Original" Pre-Data Quality - October 2020

		Residential	Commercial
1	2021-2022 Expected Reinsurance Premium	69,923,158	15,348,986
2a	Expected Average Annual Loss by Reinsurance Layer (AIR) 100% of $1640M xs $2100M	19,669,619	4,317,721
2b	Expected Average Annual Loss by Reinsurance Layer (RMS) 100% of $1640M xs $2100M	12,860,916	2,823,128
2c	Selected Total Average Annual Loss	16,265,268	3,570,425
2d	Selected Total Average Annual Loss + LAE	19,062,894	4,184,538
3	Expected Net Cost of Reinsurance	50,861,069	11,164,625
4	TWIA Earned Premium at Present Rates	322,259,386	62,410,281
5	Indicated Reinsurance Expense	15.8%	17.9%

Willis Re "Revised" With Data Quality - November 2020

		Residential	Commercial
1	2021-2022 Expected Reinsurance Premium	58,520,000	17,480,000
2a	Expected Average Annual Loss by Reinsurance Layer (AIR) 100% of $1415M xs $2100M	17,833,889	4,493,932
2b	Expected Average Annual Loss by Reinsurance Layer (RMS) 100% of $1415M xs $2100M	9,850,854	3,761,512
2c	Selected Total Average Annual Loss	13,842,372	4,127,722
2d	Selected Total Average Annual Loss + LAE	16,223,259	4,837,690
3	Expected Net Cost of Reinsurance	42,296,741	12,642,310
4	TWIA Earned Premium at Present Rates	322,259,386	62,410,281
5	Indicated Reinsurance Expense	13.1%	20.3%

Notes

1	Developed by Willis Towers Watson for prospective reinsurance contract effective 6/1/21 - 5/31/22 but doesn't consider impact of reinsurance market conditions.
2a	Developed by Willis Towers Watson, based on AIR model using exposures as of 11/30/19
2b	Developed by Willis Towers Watson, based on RMS model using exposures as of 11/30/19
2c	Selected absed on 50% RMS / 50% AIR weighting
2d	(2c) * 1.172 is the selected load for loss adjustment expense
3	(1) - (2d)
4	Exhibit 10, sheet 2, calendar year ending 12/31/19
5	(3) / (4)