

AON

Texas Windstorm Insurance Association

Catastrophe and Actuarial Services
Proposal

November 2, 2021



Aon is in the Business of Better Decisions

Aon exists to shape decisions for the better – to protect and enrich the lives of people around the world. Our colleagues provide our clients in over 120 countries with advice and solutions that give them the clarity and confidence to make better decisions to protect and grow their business.

50,000

colleagues around the world

120+

countries with Aon colleagues

Through our experience, global reach and state-of-the-art analytics, we are better able to help clients meet rapidly changing, increasingly complex and interconnected challenges across four areas of need:

Navigate new forms of volatility

Build a resilient workforce

Rethink access to capital

Addressing the underserved

Commercial Risk Solutions

Shifts in technology, economics and geopolitics are creating unprecedented volatility. We help clients identify, measure and manage their risk exposure.

\$75B+

of bound premium placed annually

Health Solutions

Health is declining, costs are rising and workers have vastly different needs. We help companies improve employee health and wellbeing while managing costs.

\$180B+

of healthcare premium directed annually

Reinsurance Solutions

Businesses, governments and communities need to become more resilient. Our expertise and insight help re/insurers navigate uncharted territories and create more relevant solutions.

\$45B+

of bound premium placed annually

Wealth Solutions

Global business is becoming increasingly difficult to navigate. We help employers, fiduciaries and investment officers optimize results and provide a more secure future for their stakeholders.

\$3.4T+

of assets under advisement

Your Aon Team Brings Analytics Scale and Expertise to TWIA

Aon's scale and breadth provide TWIA unique catastrophe analytics insights

Aon Re models
>70%
of US HO market

Place ~2B of annual
premium for public
sector clients

\$400M annual
investment in
analytics

Model Evaluation
engagements for
100+ clients annually

Partnering with the Public Sector to Promote Resiliency

For over 40 years, Aon has supported public entities globally, creating a global network consistently working together with governments to meet the most timely and challenging issues.

The PSP team is comprised of colleagues with broad experience serving in government, insurance, reinsurance, consulting, and the capital markets.

Aon's PSP by the Numbers



3,500+

Public Sector Clients Globally



500+

Colleagues Serving
Public Sector Globally



\$100B+

Public Sector Risk Transferred in
the Last 5 Years

Partnership to Support TWIA's Mission through Analytics

We work together through...

Collaborative Partnership

- Develop an evidence-driven, customized view of catastrophe risk
- Work to achieve transparency with constituency management and stakeholders

Advanced Analytics

- Industry-leading analytics team to support TWIA
- Collaborate to capitalize on a well-tested suite of models, industry experts and services

Independent Opinion

- Utilize an independent opinion
- Aon is TWIA's advocate

In order to achieve...

Option 1 Reinsurance Supporting Analytics

- Execute on catastrophe modeling with required models to support the reinsurance transaction and determine purchase level of reinsurance
- Visualize exposures
- Support in presentation of modelling results to stakeholders
- Optimize portfolio and support rate filings
- Provide real-time cat event reporting

Option 2 Custom View of Risk

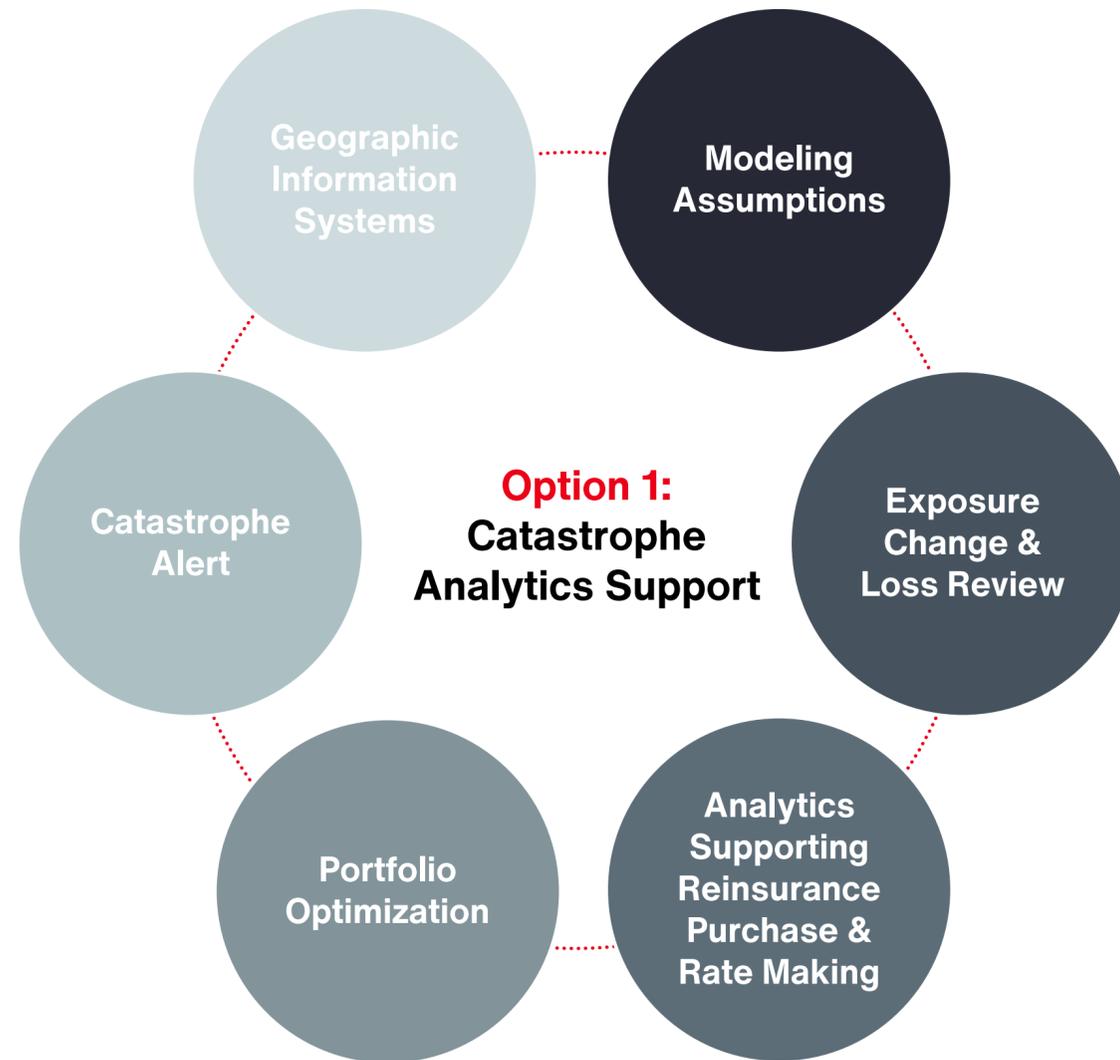
In addition to items in Option 1:

- Create a custom view of risk through an independent, transparent, and customizable modeling solutions
- Arm TWIA with knowledge that drives efficiency and financial stability for all stakeholders
- Make more informed funding and risk management decisions

Proposed Option 1

Suite of Analytics to Support Reinsurance Placement and Rate Making

Cat modeling year round engagement with TWIA



Catastrophe modeling

- Generate exposure outputs aimed at providing TWIA accurate and transparent understanding of their portfolio
- Provide accurate and detailed modeling results to TWIA for the development of reinsurance structure
- Leverage Aon's expertise with the inner-workings of models to ensure TWIA is representing their exposure as accurately as possible
- Support TWIA in discussions with reinsurers and rating agencies by providing necessary modeling detail

Reinsurance cost allocation

- Provide detailed allocation of reinsurance costs, tailored to TWIA's management view of risk in support of rate filings

Data visualization

- Grant TWIA access to Aon's geographic information system, ImpactOnDemand, to assist with exposure mapping and accumulation management
- Platform provides TWIA with the ability visualize portfolio against a comprehensive suite of hazard data in real time

Analytics Dashboards

- Interact with exposure management modeled loss dashboards, providing flexibility with reporting abilities
- Catastrophe response and real-time monitoring of event
- Hurricane Viewing Guides can be made available on the platform and will provide management level insight of exposure to varying event scenarios

Proposed Option 2

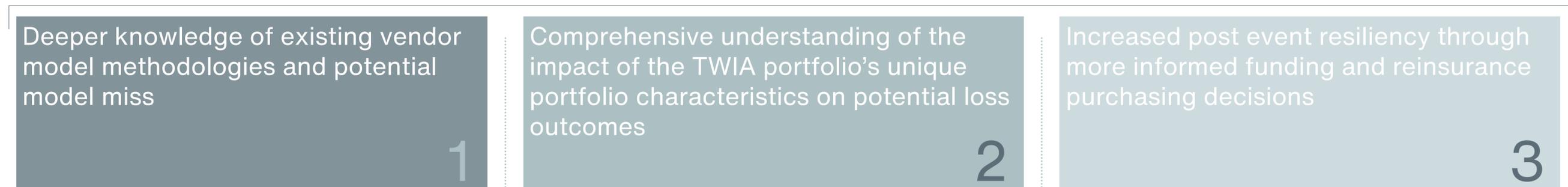
Informed Decisions with Custom View of Risk

A custom View of Risk (VoR) affords TWIA a platform to better understand why TWIA's exposures are unique and to make more informed funding and risk management decisions that ultimately protect policyholders and member companies, and increases the resiliency of the Association

Our value driven approach to View of Risk



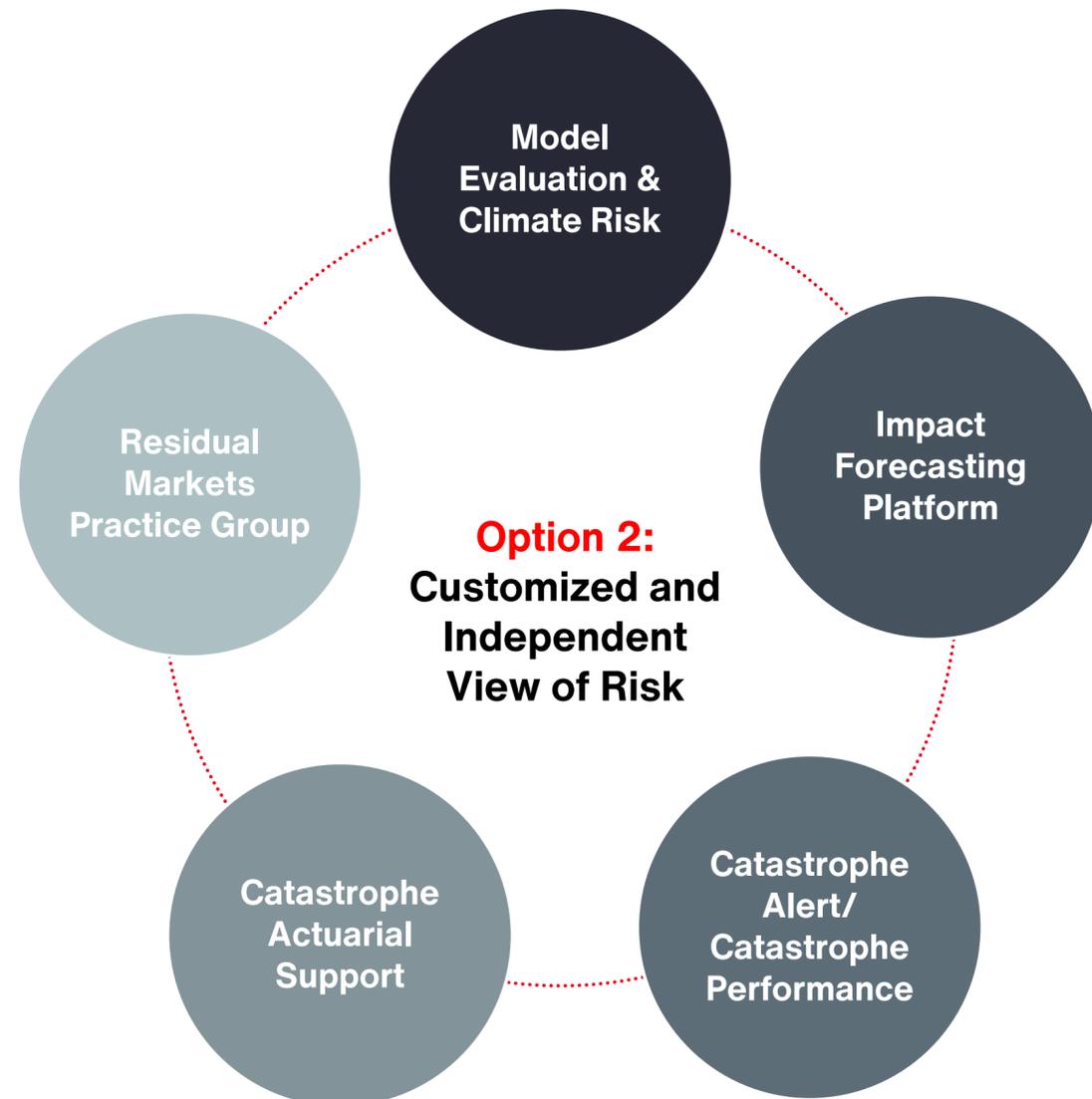
Impact of Recommended Solution



Our proposal addresses TWIA's core mission of protecting policyholders and member companies through a more informed View of Risk

Proposed Option 2

Additional Analytics Support



Model Evaluation and Climate Risk

- Bring a deep understanding of the underlying science and assumptions within each catastrophe model and provide insight into performance specific to TWIA's portfolio
- Leverage Aon's expertise in the areas of model education, model deep dives, and understanding of loss impact from model adjustments
- Work with Aon to better understand the science behind climate change and the impact in both the short and long term that it can have on the performance of your portfolio

Impact Forecasting Platform

- Access the open modeling framework and take advantage of a full suite of peril models and the knowledge gained through key industry partnerships
- Impact Forecasting is approved by the FL Commission and due for release to the broader US in 2022

Catastrophe Alert/Catastrophe Performance

- Take advantage of Aon's deep knowledge of historical events to better understand model performance relative to actual events
- Gain better insight into actual loss experience by collaborating with Aon to review historical loss data as part of a claims analysis to better address model miss

Cat Actuarial Support

- Leverage Aon's expertise in rate filing and risk pricing through the use of Cat Scoring analytics
- Evaluate profitability of your portfolio and gain insight into key loss drivers to help inform better strategic decision-making

Aon's Residual Markets Practice Group

- Follow trends, better understand exposure and loss trends, and access peer data by partnering with Aon's residual markets team

Delivering Value to TWIA Through a Partnership with Aon

**Partnership for
Reinsurance
Supporting
Analytics**

**Partnership for
TWIA View
of Risk**



Contacts

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Actuarial Services – Reinsurance Brokerage RFP

Actuarial & Underwriting Committee Meeting

November 2, 2021



TEXAS WINDSTORM
INSURANCE ASSOCIATION

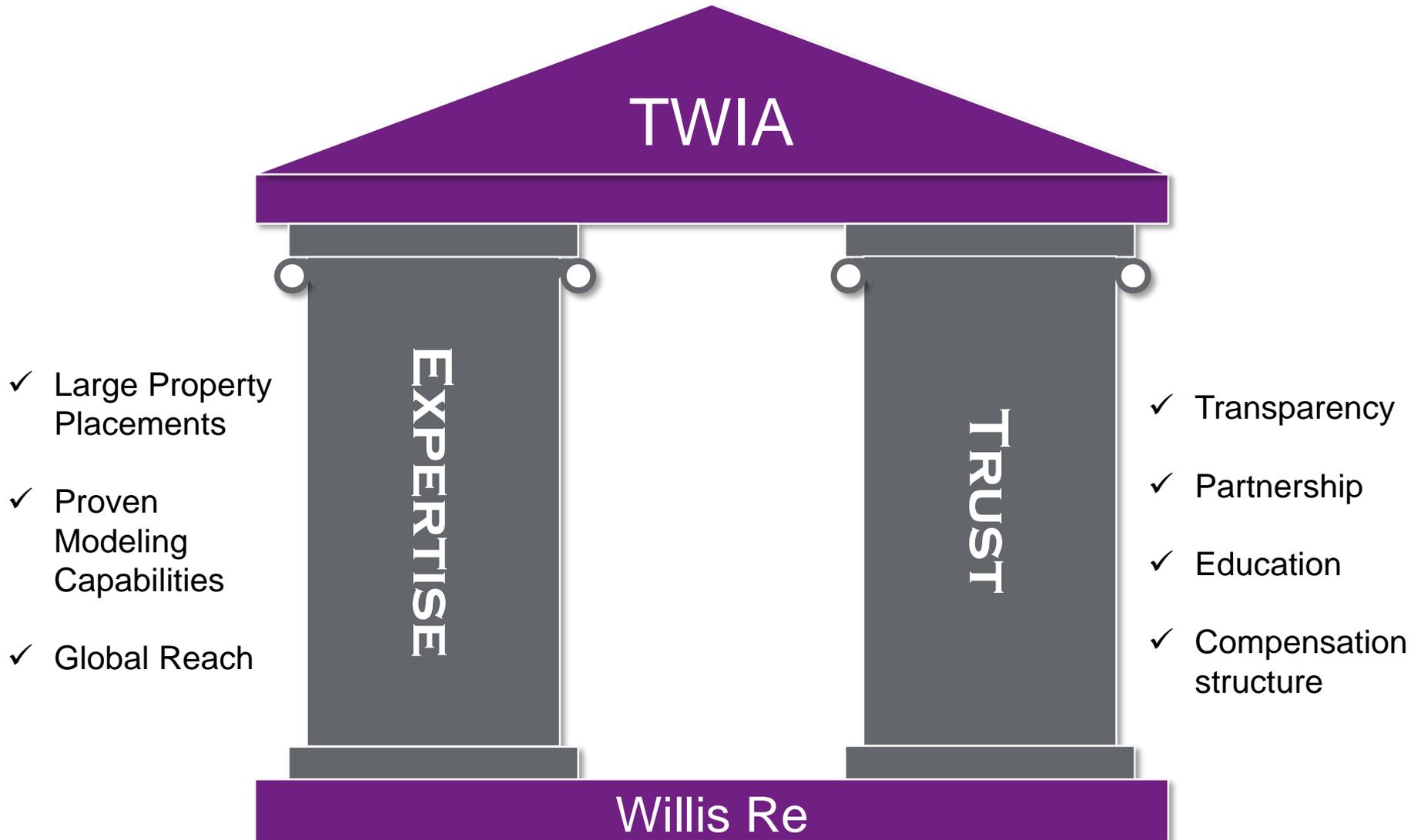


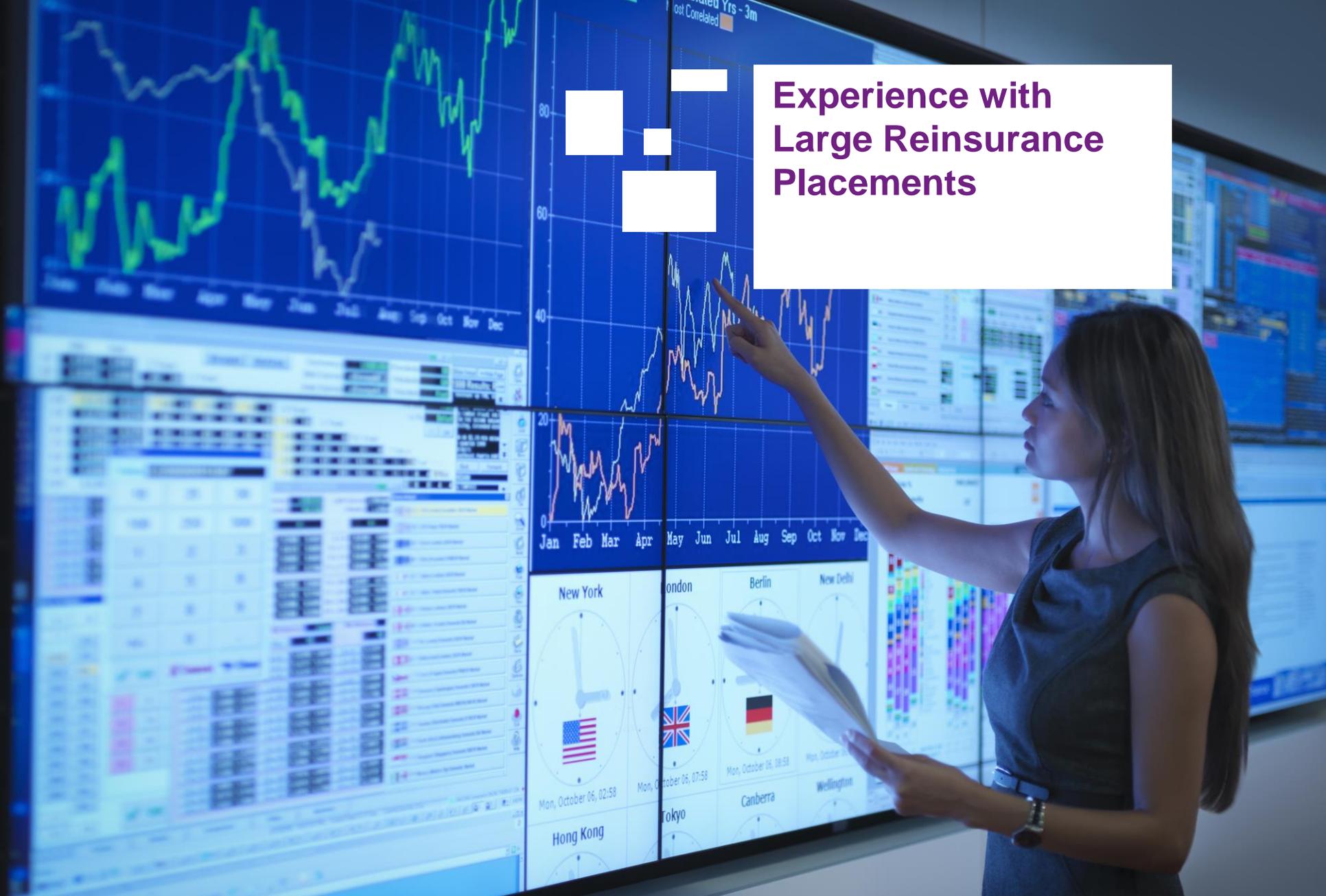
Willis Re Team

Texas Based Representation

Account Management		Catastrophe Analytics		Advisory	
 <p>Client Advocate Allen Cashin Executive Vice President – Branch Manager Dallas</p>		 <p>Jade Nguyen EVP Dallas</p>	 <p>Vaughn Jensen EVP Minneapolis</p>	 <p>James Bradshaw CEO, Willis Re New York</p>	
 <p>Prescott Bishop VP Dallas</p>		 <p>Prasad Gunturi Cat Modeling Minneapolis</p>	 <p>Bill Dubinsky Willis Re Securities New York</p>		
U.S.	International	Actuarial		Claims & Accounting	
 <p>Doug May President USA Seattle</p>	 <p>Martin Verrills EVP London</p>	 <p>Jason Harger EVP New York</p>		 <p>Nancy Burdack SVP Minneapolis</p>	
 <p>Alicia Gerte SVP Dallas</p>	 <p>Charlie Hinchliffe VP London</p>	 <p>Merlini Sieuraj VP, CSA Ft Lauderdale, FL</p>		 <p>Howard Bruch Willis Re Securities New York</p>	
 <p>Joey Walker Treaty Analyst Dallas</p>	 <p>Peter Gadeke EVP Bermuda</p>	 <p>De Jensen SVP, Contract Minneapolis</p>		 <p>Brenner Anderson Willis Re Securities New York</p>	
 <p>Jordan Fisher Willis Re Securities London</p>		<p>IN ATTENDANCE</p>			

Themes for Today





Experience with Large Reinsurance Placements

Experience with Large Reinsurance Placements

We place reinsurance for 9 of the top 10 buyers in North America

- We represent 3 of the largest residual markets since 2010
 - Florida Citizens as sole broker
 - California (CEA), co-broke
 - New York (NYPIUA)
- Experts in personal lines and small commercial
 - Represents 87% of all catastrophe placements within Willis Re
- Limit placed with over 205 counterparties across the globe (reinsurer + ILS)



Willis Re Securities ILS Capabilities

Skills

- We are capacity source agnostic and will always give you the best advice based on your needs and the current market conditions
- The team has placed in excess of \$15 billion ILS
- Global team of ILS experts with unique expertise in:
 - Underwriting and pricing
 - Contract drafting and administration
 - Modeling and trigger design
 - Reinsurance program integration
 - Secondary trading

Previous Recommendation

- In 2016, we recommended supplementing your traditional capacity with USD 900 million of cat bond capacity over three tranches:
 - \$600m, 50% placement, LOL 1.80%, Estimated ROL 3.84%
 - \$300m 100% placement, LOL 1.56%, Estimated ROL 3.62%
 - \$300m, 100% placement, LOL 1.46%, Estimated ROL 3.39%
 - These recommendations were also recommended with traditional placements to augment any bond issues
- For that year, you ended up obtaining USD \$400m, LOL 1.88%, with a ROL of 3.75%

Product Focus

- Insurance-linked securities
 - Underwritten deals for natural catastrophe and pandemic risk
 - True private deals
- Indexed insurance derivatives
- Sidecars and third party capital
- New / emerging products:
 - E.g., ILS, derivatives, and private deals for:
 - Casualty
 - Event cancellation
 - Loss development

Sales and Trading

Willis Re Securities is fully-licensed for primary issuance and secondary trading and maintains relationships with 450+ accounts and 75+ ILS investors worldwide

Specialist ILS Funds

Money Managers / Pension Funds

Reinsurers / Insurers

Private Equity Funds / Hedge Funds

Enhanced Portfolio Tools for TWIA

Portfolio risk management



- Visualization of modeling and production reports
- Drill into location characteristics & identify data quality issues
- Explore key metrics by different territory



Real-time cat management

- Overlay real-time hurricane & severe storm hazard info before and after an event
- Using visualization & cat models
- Actual claims vs Cat model output



Expanding data quality initiatives with enhanced visualization modeling tools will benefit TWIA 2022

WillisRe

Improved Data Quality

- Helping TWIA identify 3rd party data sources to expand on the quality initiatives
- Impact of new data sources on Catastrophe Models



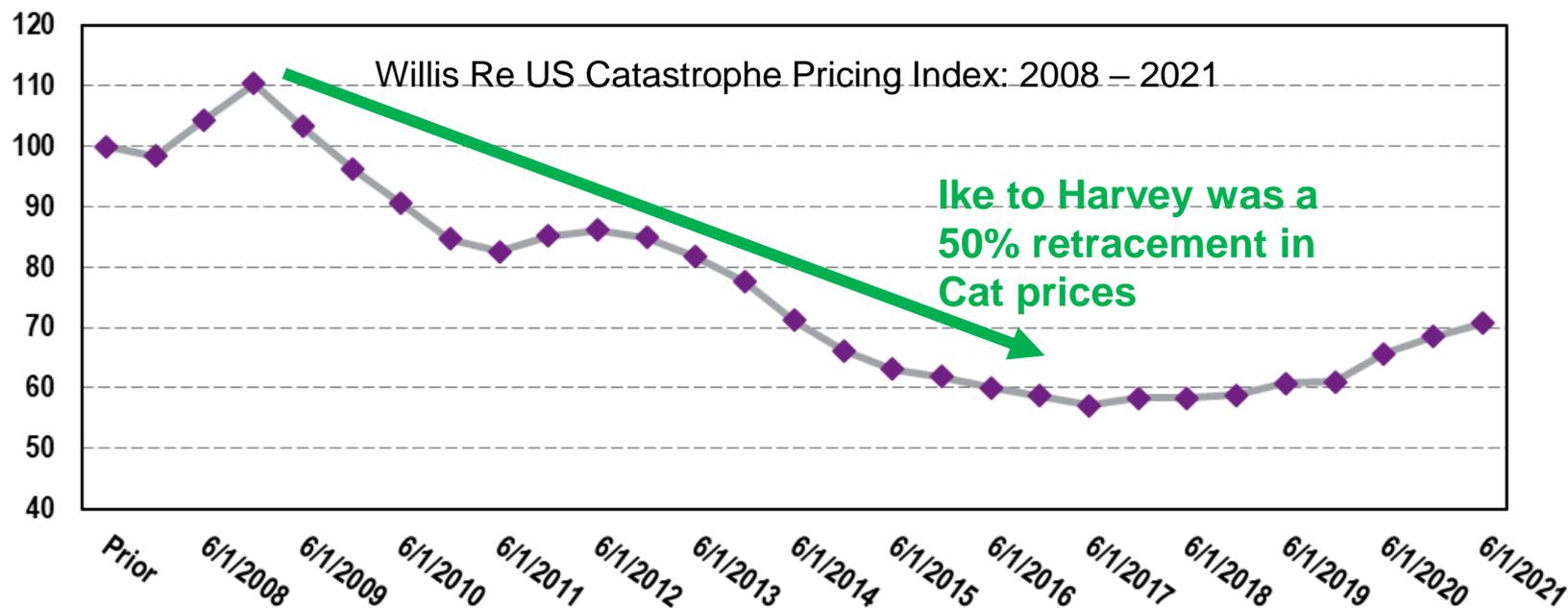
Depopulation Analysis

- Review impact on depopulated policies
- Pre and post take-out review of modeling results



An Extended and Favorable Cat Reinsurance Market

- Like most P&C carriers, TWIA has benefited from a favorable reinsurance market
- We have transitioned to a more complex reinsurance market with shifting tides



Navigating Future Challenges

Hardening
Reinsurance
Market

Funding
Structure

Tertiary: social
inflation, legislative
changes, litigation

Willis Re

Managing Reinsurance Supply Chain

Understanding Exposures &
Modeled Losses

Educating Reinsurance Partners
on Data Quality Initiatives

Legislative requirements

Reinsurance Capacity Originators

Cost

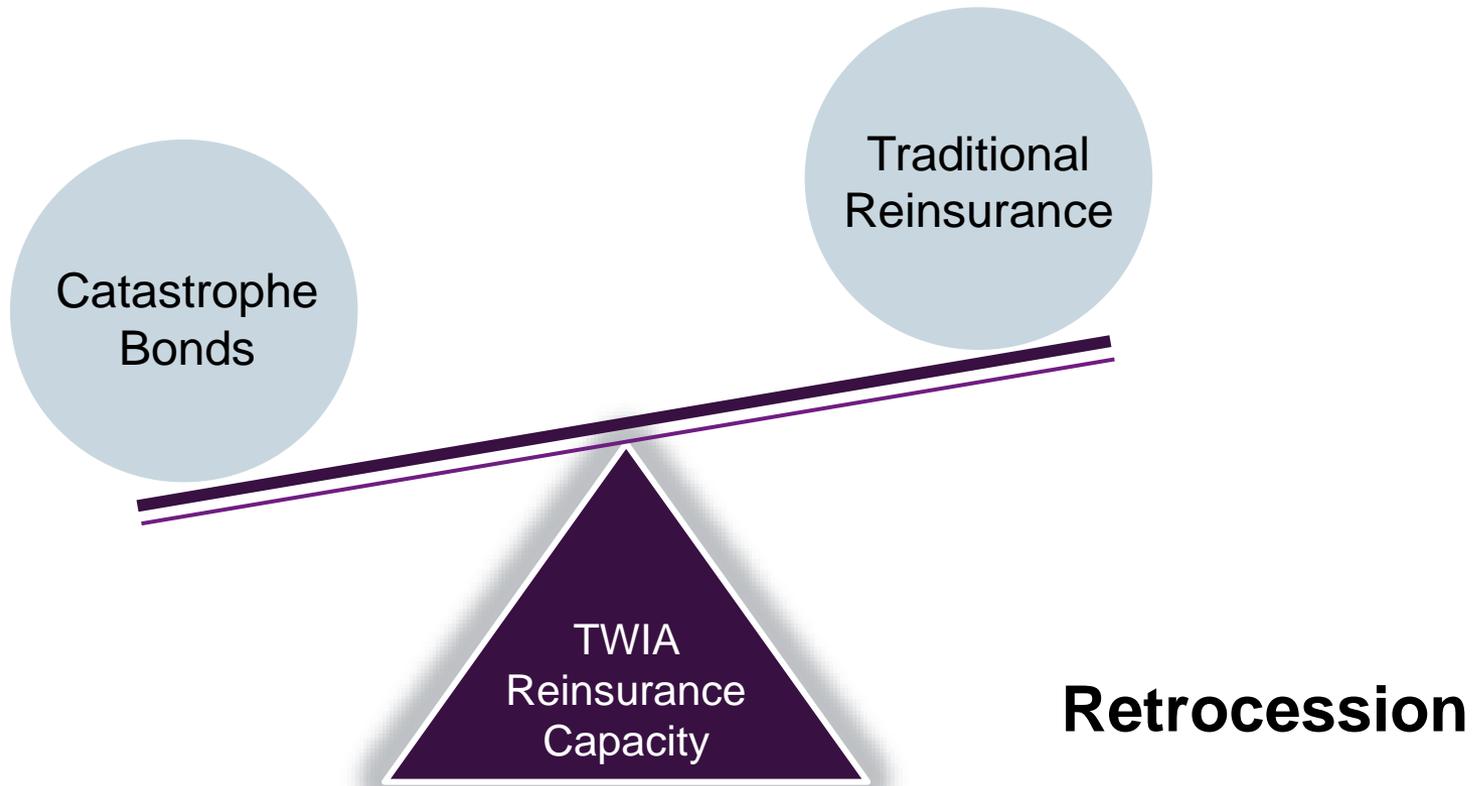
Supply

Transaction Costs

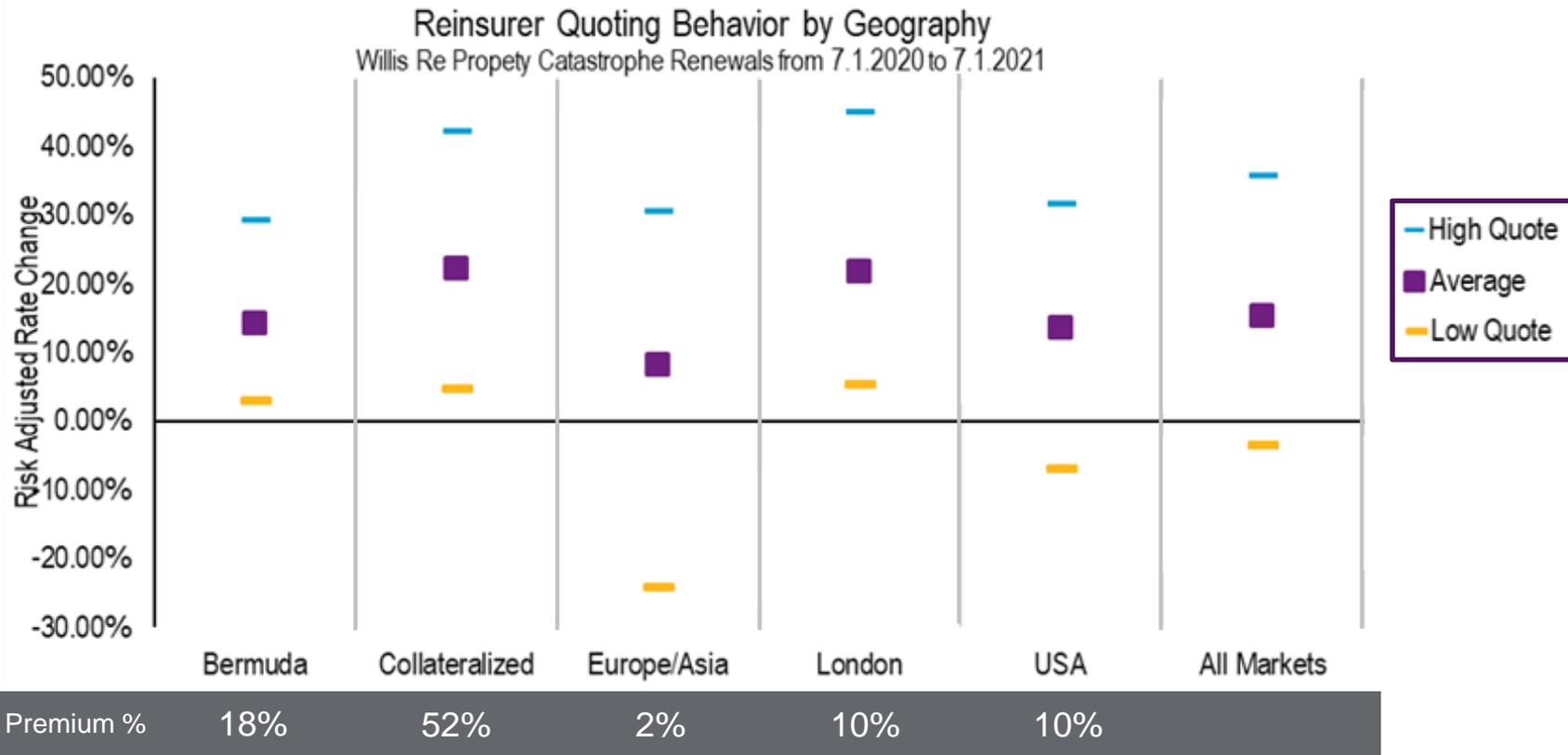
Coverage

Loss Trigger

Duration

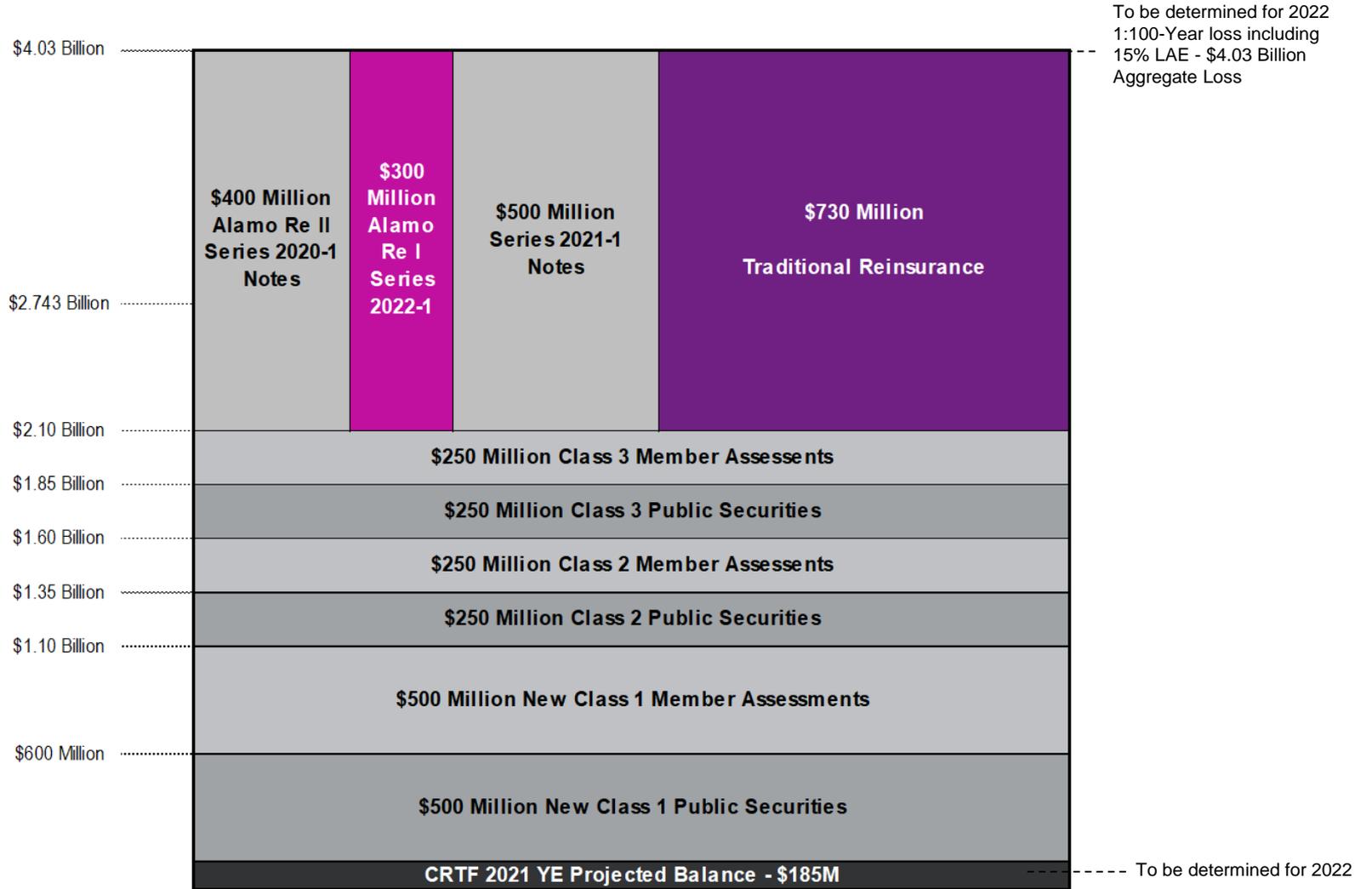


Shifting Market Conditions



2022 Cat Bond Resets

\$900 million outstanding cat bonds already in place for 2022

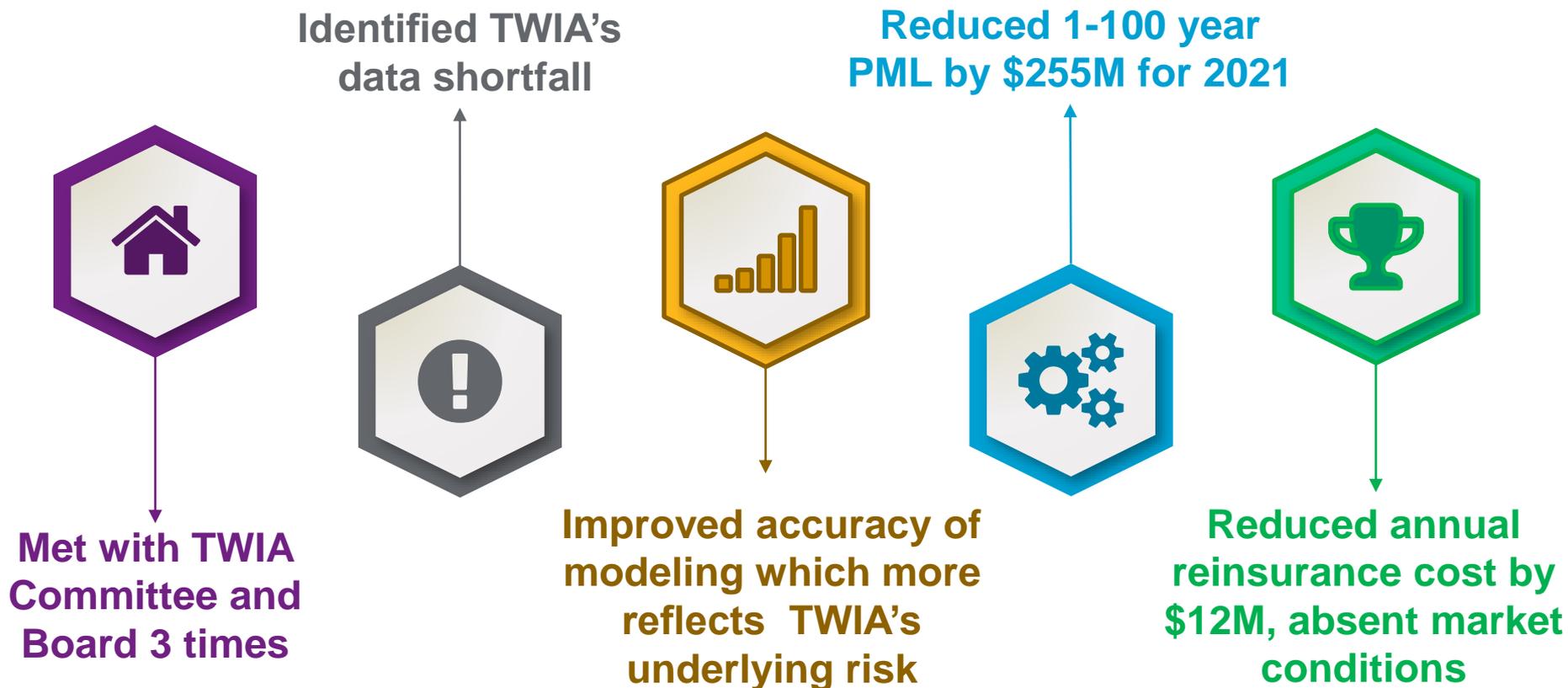




**Trust
Transparency
Education**

Willis Re's Impact on TWIA

Initiated data quality project following September 2020 Rate Study



Data Mining With Willis Re

Data quality and lack of risk characteristics impacted the rate levels and amount of reinsurance purchased.

TWIA's System (data warehouse)

Class Code
Structure Condition
Roof Year
Building Code Credits & Standards Built

Eagle View

Roof Condition
Roof Material
Roof Style
Tree Overhang

WPI-8

Type of Inspection (Roof/Openings)
Certification Date
Location: Inland / Seaward
Building Code (IRC, IBC...)
Engineered (Y or N)

Highlights of Data Extraction

- Over 10,000 risks were modeled as single-family homes, but were actually **condo risks**
- **Mobile homes** modeled tie-down as “unknown” despite being an underwriting requirement
- **Hurricane rated roof**: 50,595 locations that were previously modeled as “unknown”
- 60% had a **roof replaced** after (Hurricane Ike) but was modeled as “unknown”
- 39,937 risks obtained a **building code premium credit** yet it was ignored in modeling
- **WPI-8 Engineered**: 17,463 risks are certified yet previously modeled as “normal”

Secondary Modifiers Captured by WTW Project

RMS Modifiers for Wind-Only

Cladding Type
Commercial Appurtenant Structures
Construction Quality
Flashing and Coping Quality
Frame-Foundation Connection
Ground-Level Equipment
Opening Protection
Residential Appurtenant Structures
Roof Age and Condition
Roof Anchors
Roof Covering
Roof Equipment Hurricane Bracing
Roof Geometry
Roof Sheathing Attachment

AIR Modifiers for Wind-Only

Appurtenant Structures
Building Condition
Building Foundation Connection
Exterior Doors
Glass Percentage
Glass Type
Large Missile
Roof Anchorage
Roof Attached Structures
Roof Cover Attachment
Roof Covering
Roof Deck
Roof Deck Attachment
Roof Geometry
Roof Pitch
Roof Year Built
Seal of Approval
Small Debris
Terrain Roughness
Tree Exposure
Wall Attached Structures
Wall Type
Window Protection
Wall Siding

- Secondary modifiers highlighted in **green** are newly captured through this WTW data quality project
- WTW reviewed information from the 3 data sources together with TWIA staff to determine appropriate mappings for modeling
- Outcome: 5 secondary modifiers in RMS and 6 in AIR
 - versus 0 before
- Additional work should serve to further reduce rate indication / reinsurance costs

Competitor Comparison

- **Rate adequacy** and **reinsurance costs** are largely determined by catastrophe modeling results in hurricane exposed territories
- Up until November 2020, incomplete data was given to reinsurance partners
- Significantly better in 2021; parity with other residual markets and reinsurance buyers

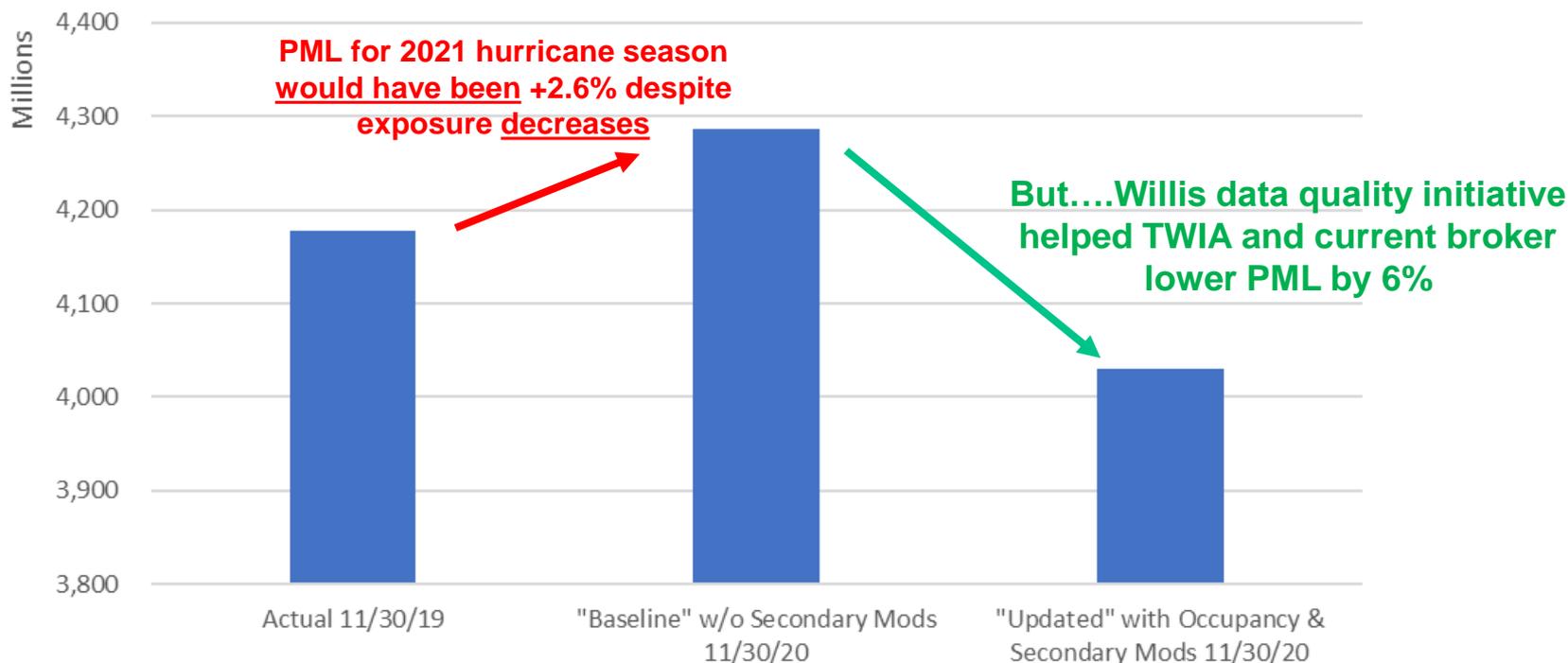
Modifier	Wind Residual Market		TWIA	
	2020 Placement	2021 Placement	2020 Placement	2021 Placement
Opening Protection	70.2%	69.3%	0.0%	19.3%
Roof Geometry	70.5%	69.2%	0.0%	60.2%
Roof Covering	61.3%	61.1%	0.0%	99.2%
Roof Age/Condition	64.0%	64.7%	0.0%	97.1%
Roof Sheathing Attachment	60.8%	60.5%	0.0%	0.0%
Residential Appurtenant Structures	96.7%	97.3%	0.0%	0.0%

TWIA Modeling Output for 2021 Program

Data source: twia.org

TWIA Exposure Change	11/30/2019 vs. 11/30/20
TIV	-0.6%
Limits	-0.9%
Risk Count	-2.8%

TWIA 1-100 Reported PML (50/50 blend AIR/RMS, +15% LAE)



Improving data quality reduced reinsurance need by \$255M and saved \$12M (~11%)



Thank you!

Questions?

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RESPONSE TO REQUEST FOR PROPOSAL

No. TWIA – 0004 Actuarial Services –
Reinsurance Brokerage

November 2, 2021

A business of Marsh McLennan



Why Guy Carpenter Is the Best Partner for TWIA



**Track Record
of Performance
and Execution**



**Unparalleled
Residual Market
Expertise**



**Strategic Coordination
Between Reinsurance and
Capital Markets**



**Risk Management
Beyond “the Model”**



**Service Fundamentals:
Claims, Coverage and
Market Management**



**Deep, Experienced and
Dedicated TWIA Team**

Why Guy Carpenter Is the Best Partner for TWIA



Track Record
of Performance
and Execution

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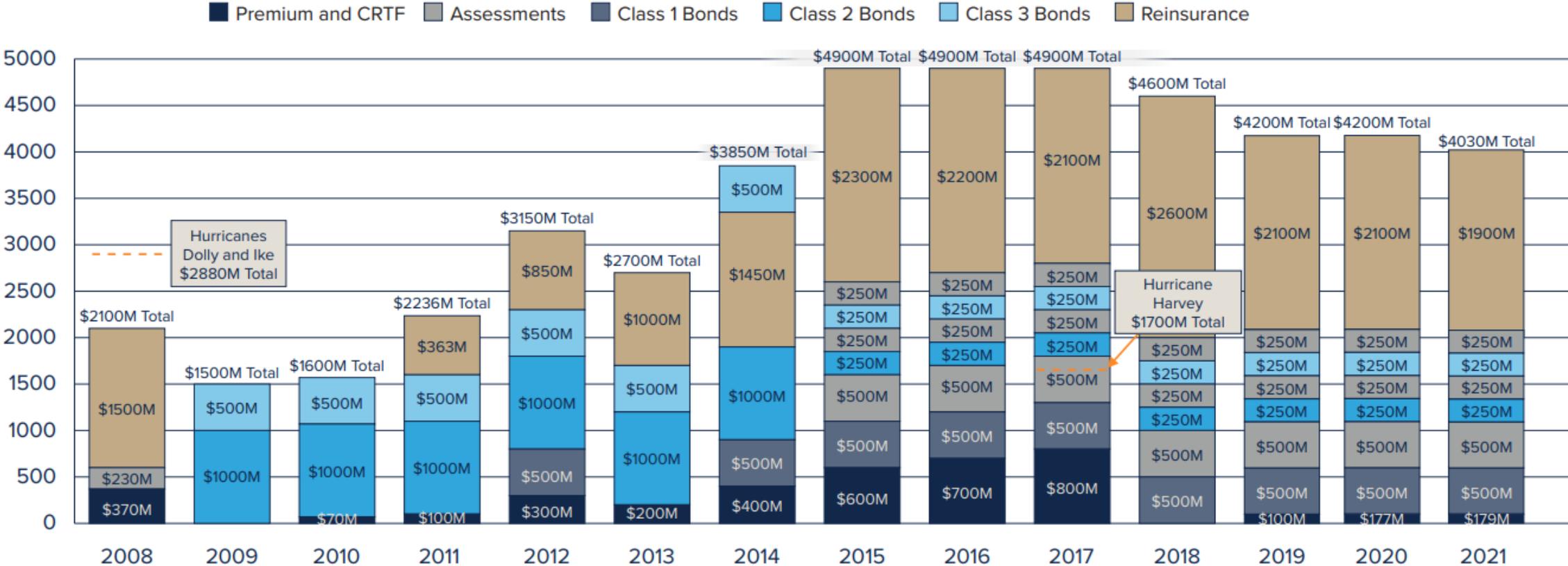
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GC Has Executed on All of TWIA's Evolving Reinsurance Requirements

TWIA Annual Report – Funding Structure 2008 to Present



Why Guy Carpenter Is the Best Partner for TWIA



Track Record
of Performance
and Execution



Unparalleled
Residual Market
Expertise

3

4

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6

Unparalleled Residual Market Expertise

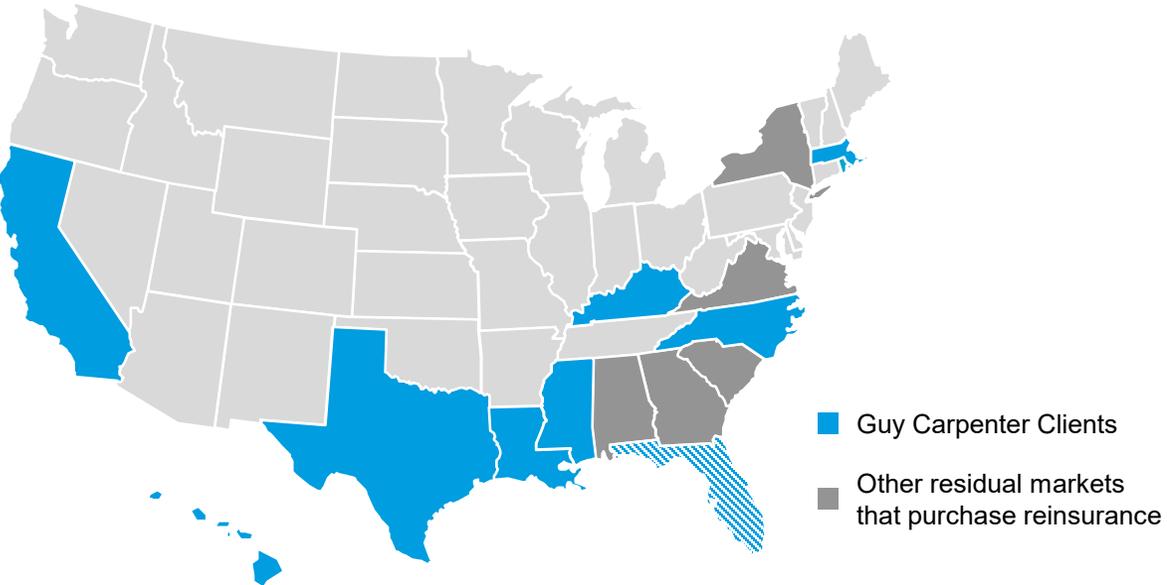


Residual markets have chosen to partner with Guy Carpenter more than any other broker.



More than USD 9.8 billion has been placed on behalf of U.S. residual markets alone in the last year.

U.S. Residual Markets:



Worldwide Residual Markets:

- ARPC (Australia)
- TRIP (Belgium)
- British Columbia Ministry of Agriculture (Canada)
- Insurance Company of British Columbia (Canada)
- Saskatchewan Government Insurance (Canada)
- CCR (France)
- Gareat DIC (France)
- GLR (France)
- Extremus (Germany)
- India Terror Pool (India)
- Indonesian Earthquake Reinsurance Pool (Indonesia)
- Natural Disaster Fund (Mexico)
- Morocco Catastrophe Insurance Programme (Morocco)
- Norwegian Natural Perils Pool (Norway)
- Pool of Insurance Against Natural Disasters (Romania)
- Southeast Asia Disaster Risk Insurance Facility (SEADRIF) (Southeast Asia)
- Taiwan Residential Earthquake Insurance Fund (Taiwan)
- TCIP (Turkey)
- Pool Re (United Kingdom)
- Flood Re (United Kingdom)

Expertise and Experience Generating Creative Capacity



Generating new capacity for residual markets in challenging markets after major catastrophes

- **CEA**: placed reinsurance programs since inception following Northridge earthquake
- **CA Wildfire Fund**: generated capacity for first reinsurance program following 2017 and 2018 fires
- **Florida Citizens**: secured new aggregate capacity and grew program post Irma
- **MWUA**: significantly grew reinsurance program post Katrina
- **NCIUA**: placed first reinsurance program, significantly increased size of reinsurance program post Florence
- **NFIP**: placed first reinsurance program and grew further despite Harvey loss in year one



Generating new capacity via new capital sources and innovative structures

- Capital markets via GC Securities: placed the first residual market bond in 2009 and **remain #1 overall in this space**, achieved 7 of the top 10 tightest priced deals 2013-2020 and 11 of the top 15 tightest priced deals 2013 – 2020 YTD.
- Introduced direct insurance and facultative (“D&F”) capacity on multiple residual market placements to secure additional capacity at competitive terms and conditions
- Deployed **proprietary parametric capacity on MWUA** placement
- Placed **first 100% Aggregate** placement for residual market
- Implemented Aggregate, Top & Drop, multi-year for multiple residual markets

Why Guy Carpenter Is the Best Partner for TWIA



Track Record
of Performance
and Execution



Unparalleled
Residual Market
Expertise



Strategic Coordination
Between Reinsurance and
Capital Markets

4

5

6

Coordination Between Guy Carpenter and GC Securities Provides a Strategic Advantage to TWIA

Traditional Business

- Over 3,100 employees across more than 60 offices globally

GC Securities

- GC Securities consists of 23 capital markets and investment banking professionals dedicated to insurance in New York, London, Dublin and Tokyo
- The team has completed a substantial number of capital markets and financial advisory transactions in the past 20 years

Reinsurance Broking

- Risk transfer between cedent and reinsurer via a reinsurance product
- Advising on reinsurance structure and market conditions

Insurance-Linked Securities

- Risk transfer between cedent and investor via a securities product
- Products include cat bonds, sidecars, R/I transformers, collateralized R/I, derivatives and ILWs

Financial Advisory

Capital Raisings

- Equity, surplus notes and debt private placements
- New insurance company formations

Mergers & Acquisitions

- Advisory services for strategic acquisitions and divestitures
- Strategic planning

Spectrum of Client Solutions



Demonstrated Cat Bond Leader With Public Sector Sponsors

2015-2021YTD 144A Cat Bond League Table*			
Position	Arranger / Dealer	# Deals	Capital Raised (\$ millions)
1	GC Securities	81	\$22,002
2	Aon Benfield Securities	79	\$27,823
3	Swiss Re Capital Markets	49	\$15,009
4	Goldman Sachs	30	\$9,180
5	Willis Towers Watson	19	\$3,540

2015-2021YTD 144A Government and Public Sector Cat Bond League Table ⁽¹⁾			
Position	Arranger / Dealer	# Deals	Capital Raised (\$ millions)
1	GC Securities	30	\$9,500
2	Swiss Re Capital Markets	16	\$7,215
3	Aon Securities	15	\$6,490
4	Munich Re Capital Markets	6	\$2,320
5	Citibank	4	\$2,320

2015-2021YTD 144A Government and Public Sector Wind Exposed Cat Bond League Table ⁽¹⁾			
Position	Arranger / Dealer	# Deals	Capital Raised (\$ millions)
1	GC Securities	20	\$6,260
2	Aon Securities	5	\$1,975
3	Citibank	4	\$960
4	Swiss Re Capital Markets	2	\$400
5	Goldman Sachs	1	\$525

- Most prominent ILS arranger particularly for public sector clients having completed ~30 catastrophe bonds for a variety of these clients globally
- Pioneered the use of catastrophe bonds (including transformer reinsurer-based cat bond structures, as applicable) for public sector insurers in 2009
- Work closely with the traditional reinsurance team to agnostically evaluate terms and conditions of traditional reinsurance versus ILS capital
- Through seven Alamo Re cat bond offerings raised \$3 billion of reinsurance limit from 58 distinct investors, significantly expanding TWIA's sources of risk transfer capacity

2014-2015, 2017-2021
\$3,000,000,000
Seven catastrophe bonds:
Alamo Re Ltd. 2021-1
Alamo Re II 2020-1
Alamo Re Ltd. 2019-1
Alamo Re Ltd. 2018-1



TEXAS WINDSTORM INSURANCE ASSOCIATION

Sole Structuring Agent and Sole Bookrunner

2021
\$950,000,000
Everglades Re 2021-1, 2021-2
Principal At-Risk Variable Rate Notes
Due May 14, 2024



CITIZENS PROPERTY INSURANCE CORPORATION

Joint Structuring Agent and Joint Bookrunner

2015, 2017, 2018, 2020, 2021
\$750,000,000
Five cat bond issuances:
Pelican IV Re 2018-1
Pelican IV Re 2017-1
Pelican III Re 2015-1
Catahoula Re Pte. 2020-1
Pelican IV Re 2021-1



LOUISIANA CITIZENS Property Insurance Corporation

Sole Structuring Agent and Sole Bookrunner

2009-2011, 2013, 2019, 2021
~\$2,000,000,000
Seven cat bond issuances: Cape Lookout Re, Tar Heel Re, Johnston Re, Parkton Re



NCIUA/JUA

Sole Structuring Agent and Sole Bookrunner

2018, 2020, 2021
\$1,475,000,000
Three cat bond issuances:
FloodSmart Re 2021-1
FloodSmart Re 2020-1
FloodSmart Re 2018-1



FEMA

Sole Structuring Agent and Sole Bookrunner

2017, 2020
\$845,000,000
Two cat bond issuances:
FONDEN (Mexico) 2020-1
FONDEN (Mexico) 2017-1



THE WORLD BANK

FONDEN

Joint Structuring Agent and Joint Bookrunner

2019
\$225,000,000
Republic of the Philippines
Catastrophe-Linked Capital At Risk Notes



THE WORLD BANK

Joint Structuring Agent, Joint Bookrunner and Joint Manager

2010, 2015, 2017
\$746,000,000
Three catastrophe bonds:
Cranberry Re Ltd. 2017-1
Cranberry Re Ltd. 2015-1
Shore Re Ltd. 2010-1



MASS PROPERTY INSURANCE

Sole Structurer and Sole Bookrunner & Joint Structuring Agent

Why Guy Carpenter Is the Best Partner for TWIA



Track Record
of Performance
and Execution



Unparalleled
Residual Market
Expertise



Strategic Coordination
Between Reinsurance and
Capital Markets



Risk Management
Beyond “the Model”

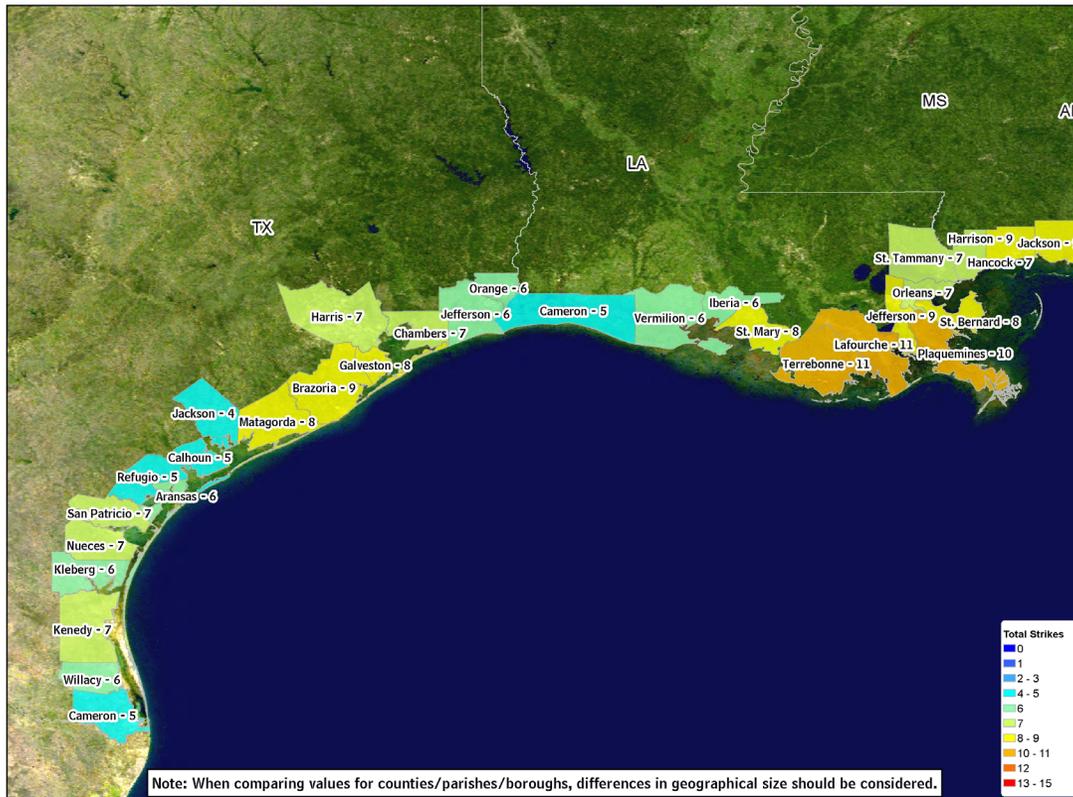
5

6

Western Gulf of Mexico Hurricane Frequency

One of the Most Hurricane Prone Regions in the United States

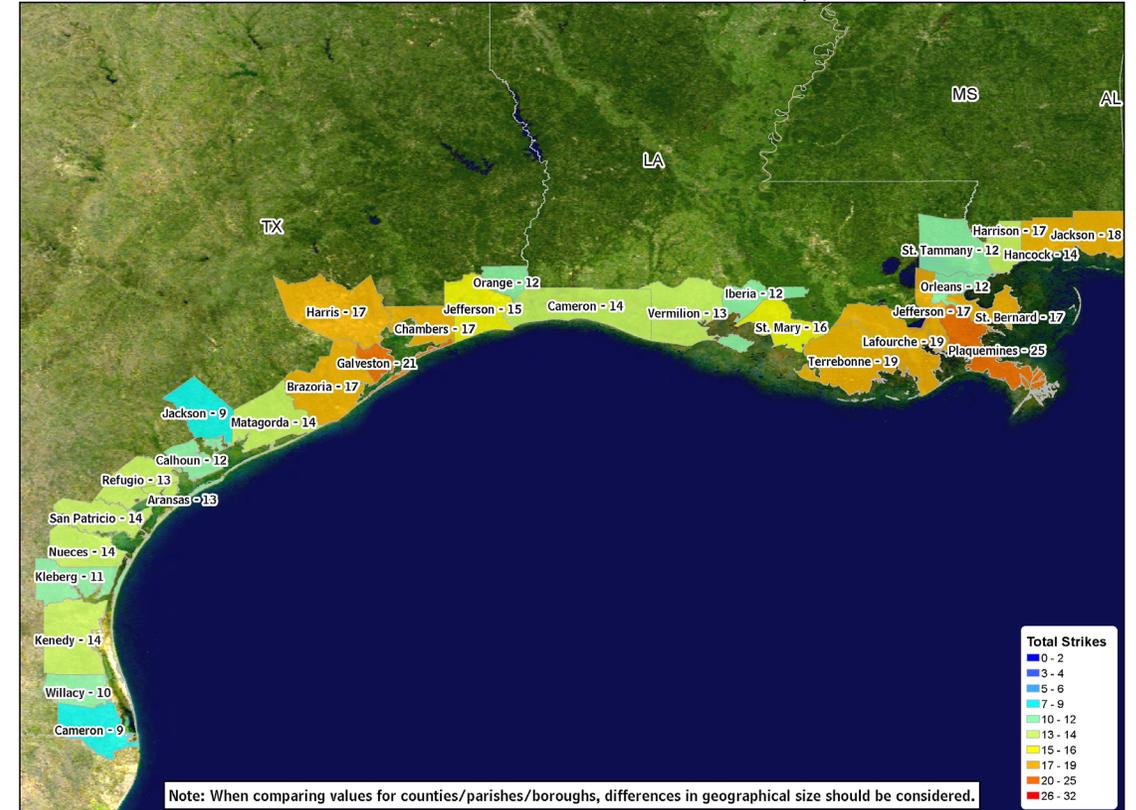
Total Number of Major Hurricane Strikes, 1900-2010



Total number of major hurricane strikes by counties/parishes/boroughs, 1900-2010

Data from NWS NHC 46: Hurricane Experience Levels of Coastal County Populations from Texas to Maine. Jerry D. Jarrell, Paul J. Hebert, and Max Mayfield. August, 1992, with updates.

Total Number of Hurricane Strikes, 1900-2010



Total number of hurricane strikes by counties/parishes/boroughs, 1900-2010

IPCC Assessment Report 6 Key Findings on Climate Change and Tropical Cyclones



Hurricane Climate Impacts



Higher Storm Surge

- Sea level rise + storm winds projected to increase flooding



Heavier Rainfall

- Warmer atmosphere holds more moisture
- Warmer ocean temperatures increase evaporation off ocean

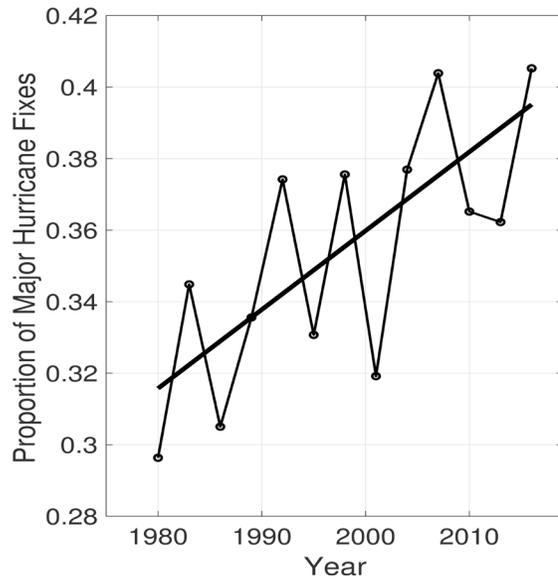


More Intense Storms

- Proportion of Major Hurricanes (cat 3 or higher) projected to increase
- Rapid intensification trending upwards

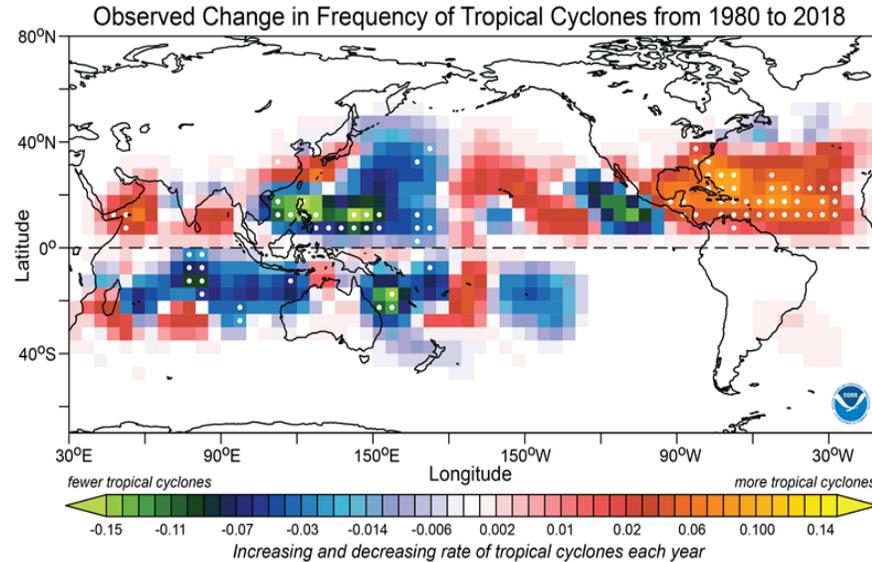
Climate Change and Tropical Cyclone Intensity

Kossin et al. 2020



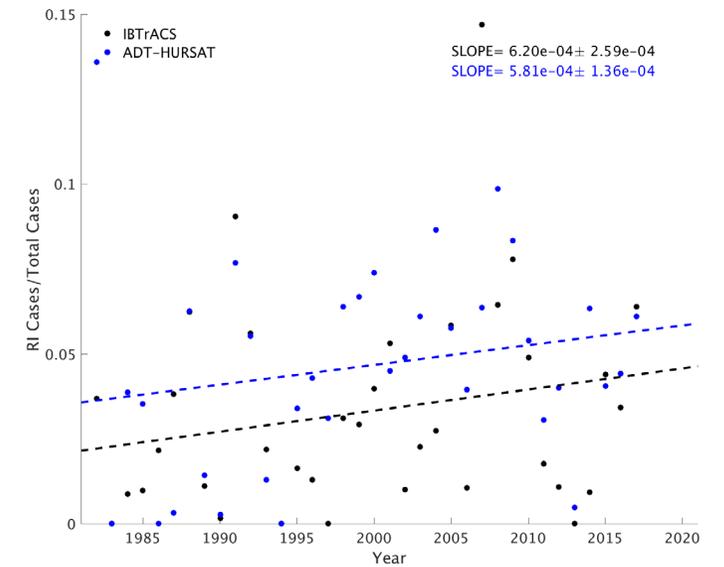
Between, 1979-2017, the proportion of global major (category 3 or above) hurricanes to all hurricanes increases by 25% (~6% per decade).

Murakami et al. 2020



Observed linear trends in tropical cyclone frequency for the period 1980 to 2018 show no change overall in global tropical cyclone frequency.

Bhatia et al. 2020



Between 1982-2017, rapid intensification (RI) ratio (the number of 24-h intensity changes above 30 knots divided by the total number of 24-h intensity changes) is increasing in the Atlantic basin.

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Risk Management
Beyond “the Model”



Service Fundamentals:
Claims, Coverage and
Market Management

6

Claims Collections – Execution When it Counts

- We have an experienced and **dedicated team of claims professionals ready to assist on complex claims**
- We have a **structured preventative, tactical, and strategic approach to claims** which mitigates collection risk and accelerates claims payments
- This was tested during Hurricane Ike, where we **facilitated the collection of \$1.5 billion in reinsurance claims without incident**
- In addition to transactional execution, our claims expertise was tested during Ike, where we **assisted TWIA in complicated "slab claim" discussions** with various interested parties



800 people
In 12 offices worldwide



In 2020 Guy Carpenter processed:
>\$13 billion claim billings issued



~ \$45 billion in claims collected
in the last 5 years

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Deep, Experienced and
Dedicated TWIA Team

TWIA's Dedicated Team



Executive and Strategic Lead

 **Tad Delk**
Managing Director

US Broking Team

 **Carlos Garcia**
Managing Director

 **Tyler Thomas**
Vice President

 **Marie Campbell**
Vice President

UK Broking Team

 **James Beresford**
Managing Director
London

 **Henry Brook**
Vice President
London

 **Alice Fraser**
Broker
London

GC Securities Team

 **Cory Anger**
Managing Director

 **Ryan Clarke**
Managing Director

 **Scott Hendrick**
Asst. Vice President

Analytics and Advisory

 **Dan Halladay**
Senior Vice President
Catastrophe Modeling

 **Rachel Ernst**
Senior Vice President
Catastrophe Modeling

 **Kieran Bhatia**
Vice President
Peril Advisory

 **Jonathan Hayes, ACAS**
Managing Director
Actuarial

 **Mark Shapovalov**
Asst. Vice President
Actuarial

Reinsurance Administration

 **Corrine Kruse, SVP**
Global Claims Consulting

 **Vilienne Gillot, AVP**
Contracts

 **Don Keeks, AVP**
Accounting & Claims



A business of Marsh McLennan