



Managing non-peak risks

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Willis Re

Agenda

- § Managing cat risk & defining risk tolerance
- § Technology that can be used to evaluate risk
- § Uses of reinsurance to manage risk

What are ways to manage risk from catastrophes?

Avoid <ul style="list-style-type: none">• Exit or don't enter states with exposure to undesirable risk	Transfer <ul style="list-style-type: none">• Reinsurance strategies• How much to transfer?
Reduce <ul style="list-style-type: none">• Accumulation management• What is acceptable?	Retain <ul style="list-style-type: none">• What is an acceptable retention?• How to budget?

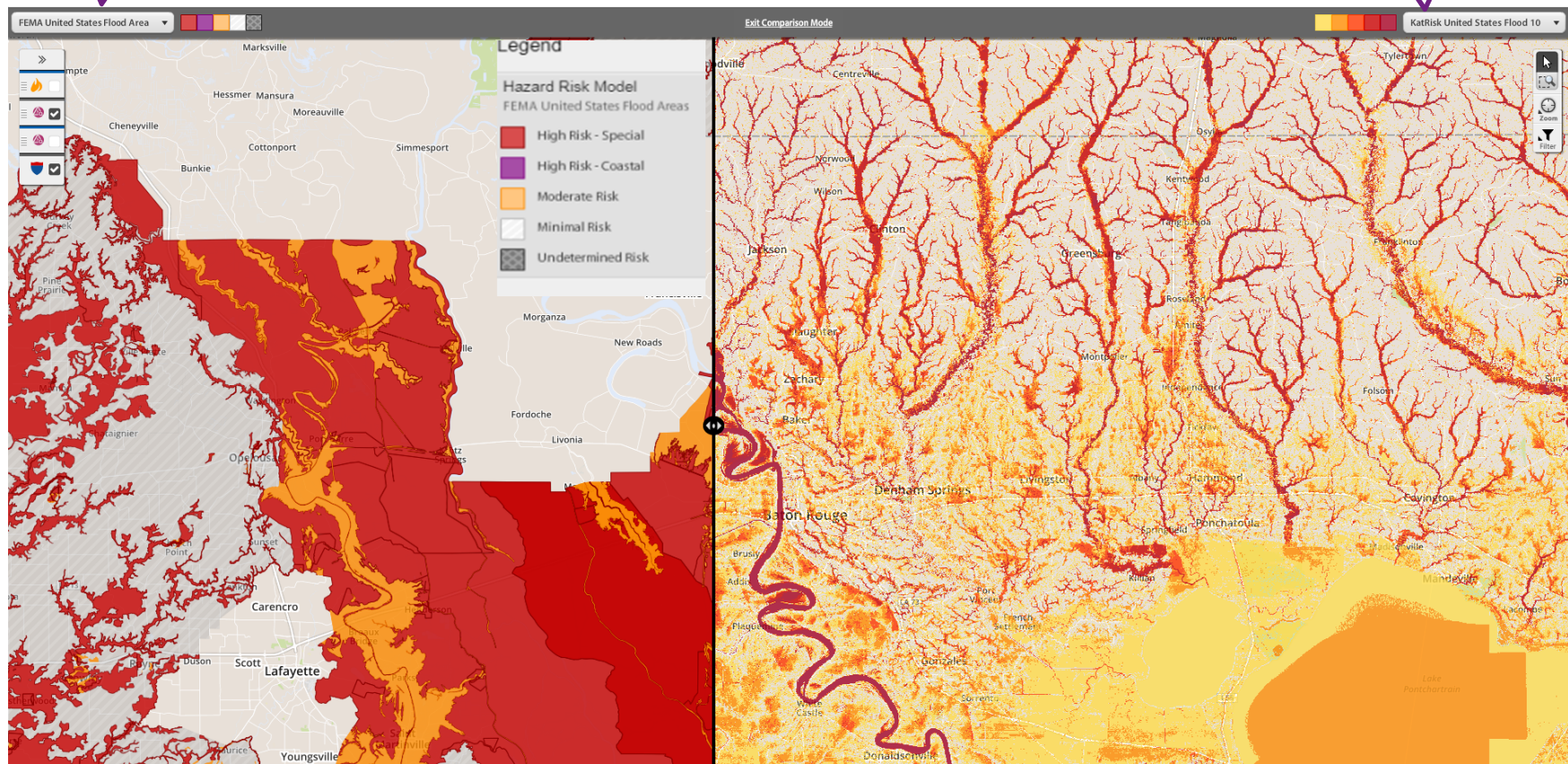
Sample risk tolerance statements

- § **Ratings based:** Insurer will not take risks that will endanger their rating from A.M. Best
- § **Risk Based Capital based:** Insurer will maintain an RBC Ratio of at least xxx%
- § **Event based:** Insurer will maintain capital to support a loss at least as large as experienced from a Joplin style event
- § **Probability based:** Insurer will maintain capital so that the probability of a loss exceeding capital is no more than 3 in 10,000 (AA S&P level)
- § **Earnings based:** Insurer will not take any risks that could result in the loss of earnings of more one quarter's average earnings over the past 5 years
- § **Capital based:** Insurer will not take risks that will produce a loss of more than 25% of capital at the 1-in-250 probability level

Technological geospatial advances expanding view of flood risk

FEMA digitized maps

KatRisk view



New commercially vendor models available for flood

§ Storm Surge and U.S. Inland Flood models are available from the major commercial vendor models

§ Storm Surge = AIR, RMS, KatRisk, and CoreLogic

§ Inland Flood = AIR and CoreLogic (introduced in 2016)

- KatRisk location-level loss analytics (SoloKat) available **now**
- KatRisk probabilistic model for U.S. (SpatialKat) available in 2017
- RMS probabilistic model for U.S. available in 2018



Technology enhancing ability to assess wildfire exposure

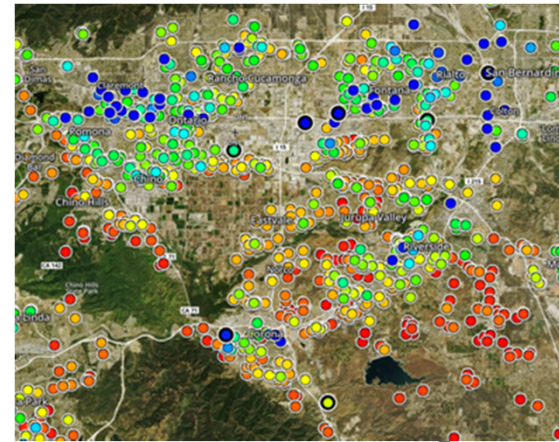
Probabilistic modeling

RQE Wildfire Ground Up Loss

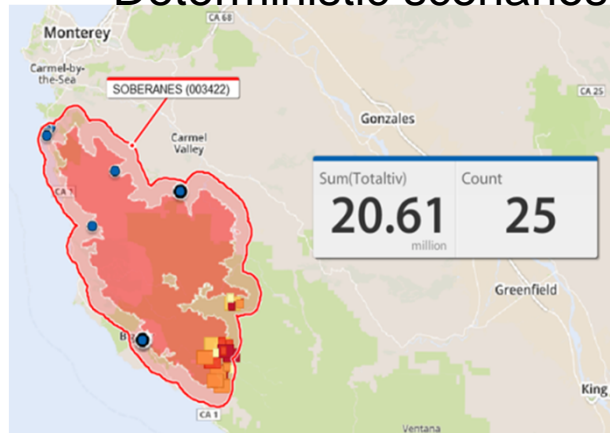
Critical Probability	Return Period	Default	Setback		
			0-30 ft	30-60ft	60-90ft
0.40%	250	\$342,911	\$479,895	\$342,911	\$247,430
1.00%	100	\$235,631	\$347,123	\$235,631	\$158,795

Average Annual Loss \$23,384 \$31,911 \$21,869 \$14,740

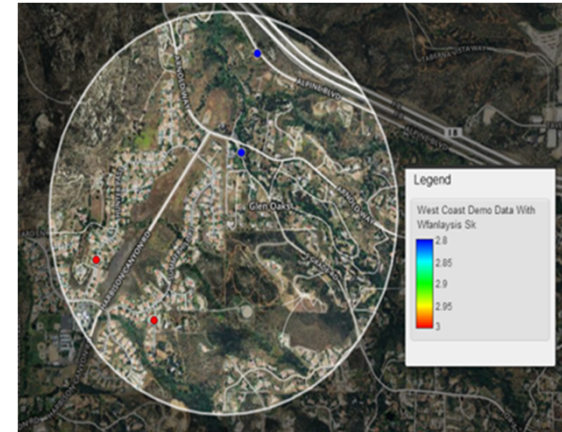
Riskiness Ranking



Deterministic scenarios



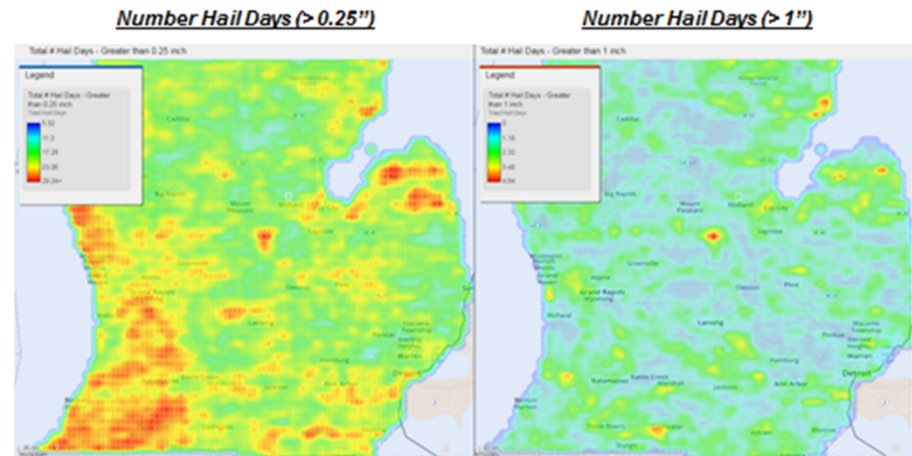
Accumulation Mgmt/ UW



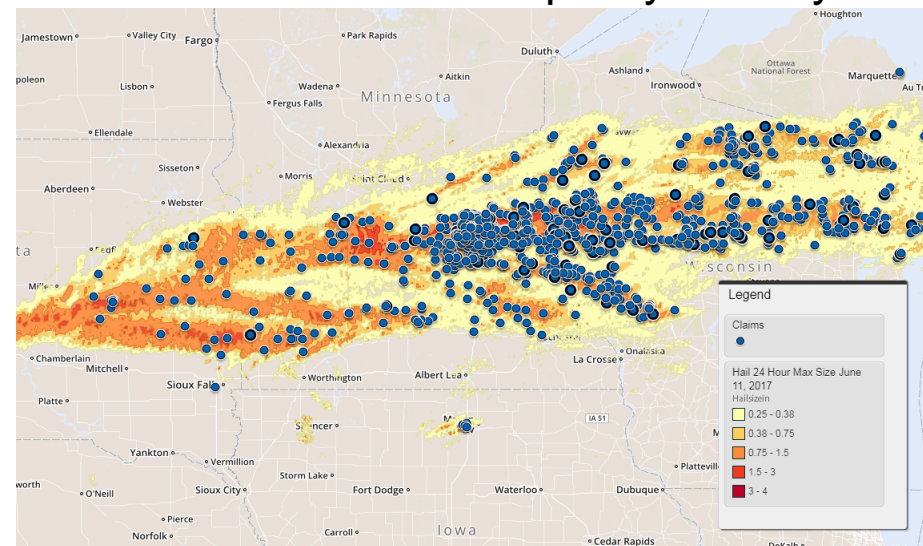
Severe convective storm

- § SCS peril tends to be higher frequency/lower severity than HU/EQ
- § Historically available vendor models often underestimate vs recent experience
- § Other “models” can be used to estimate
 - § Retained (budgeted) cat
 - § Preliminary event loss estimates
- § Reinsurance pricing relies on adjusted experience

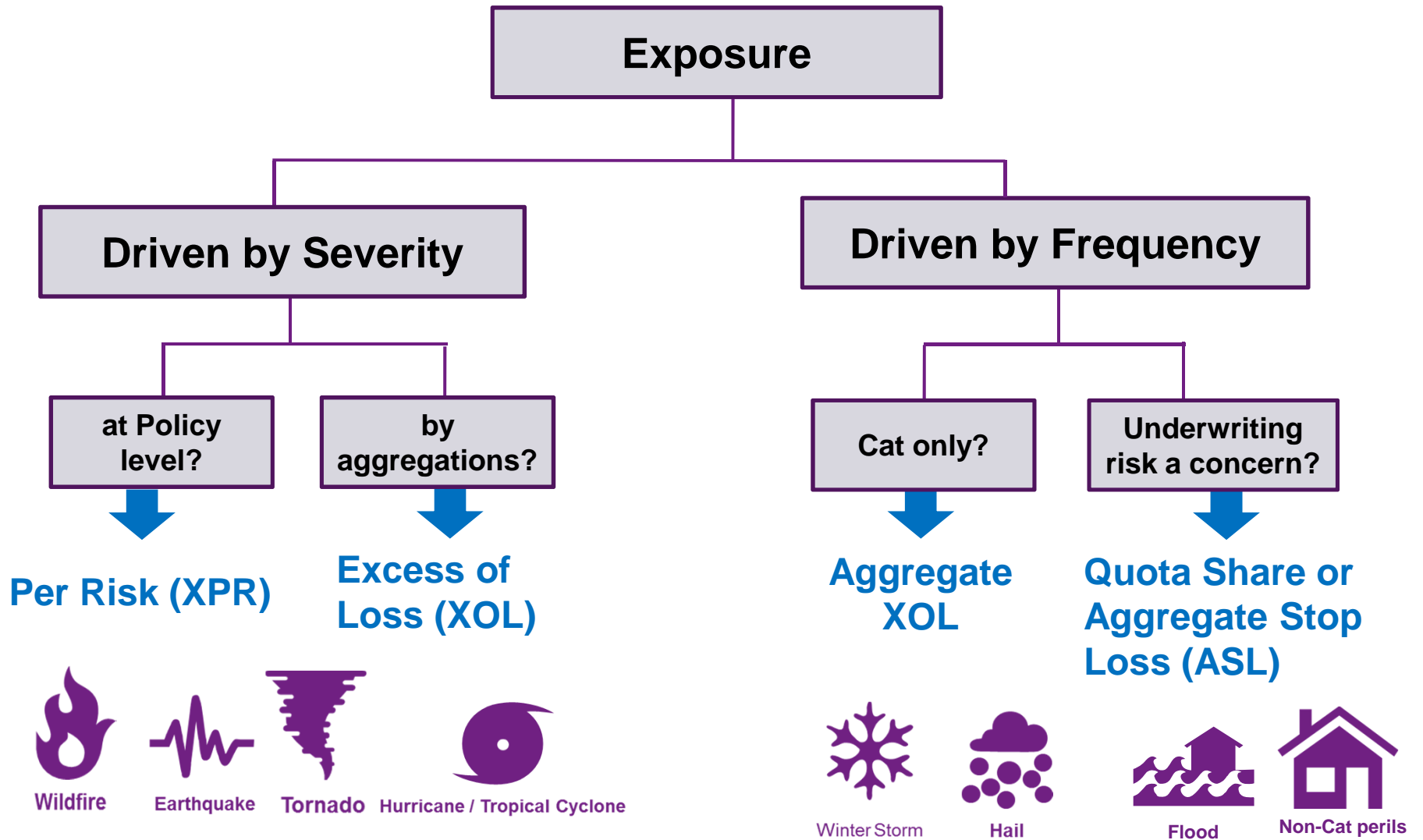
Radar hail data
Frequency – radar hail data from 2000 - 2016



Radar hail swath with policy overlay

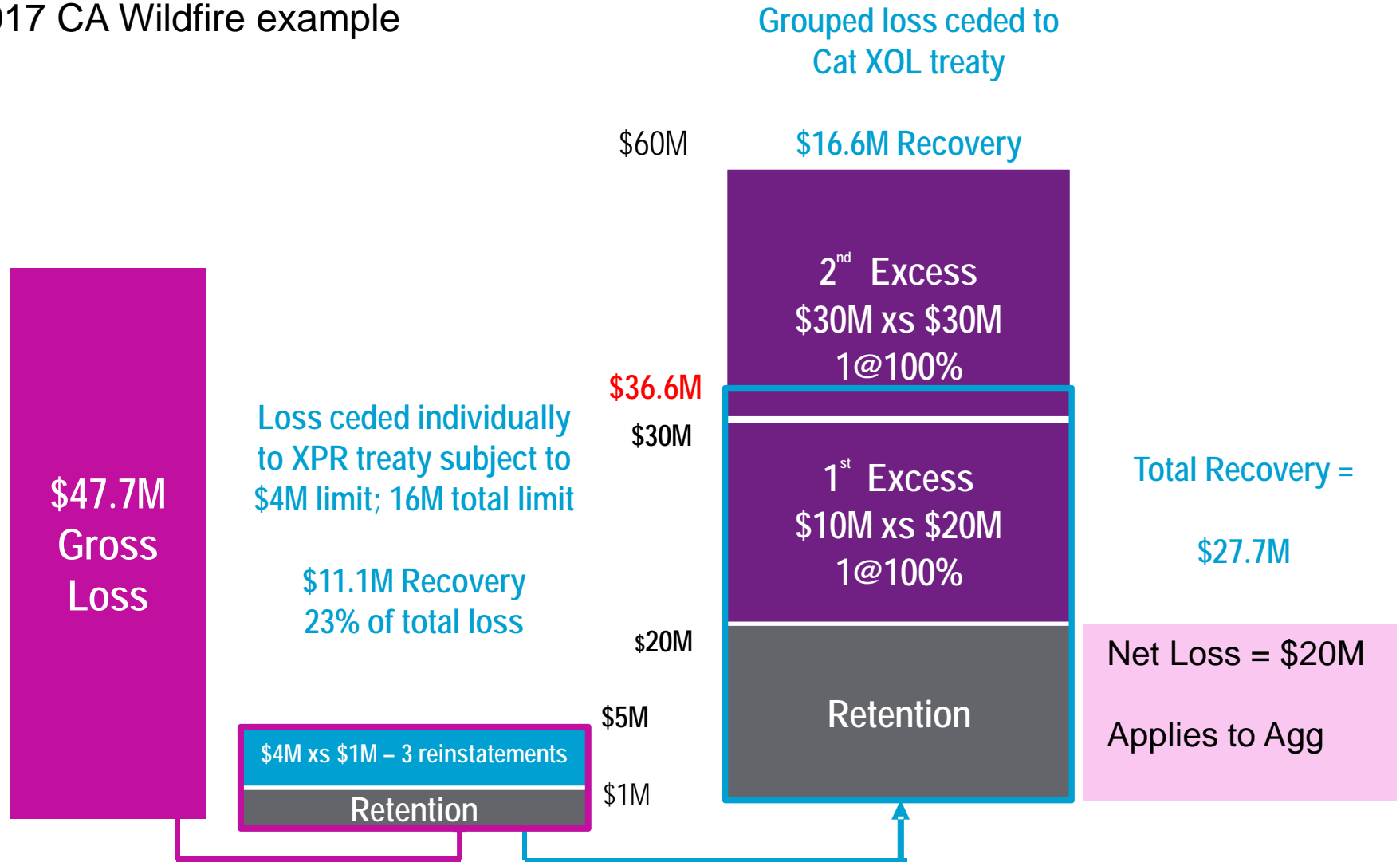


Using reinsurance

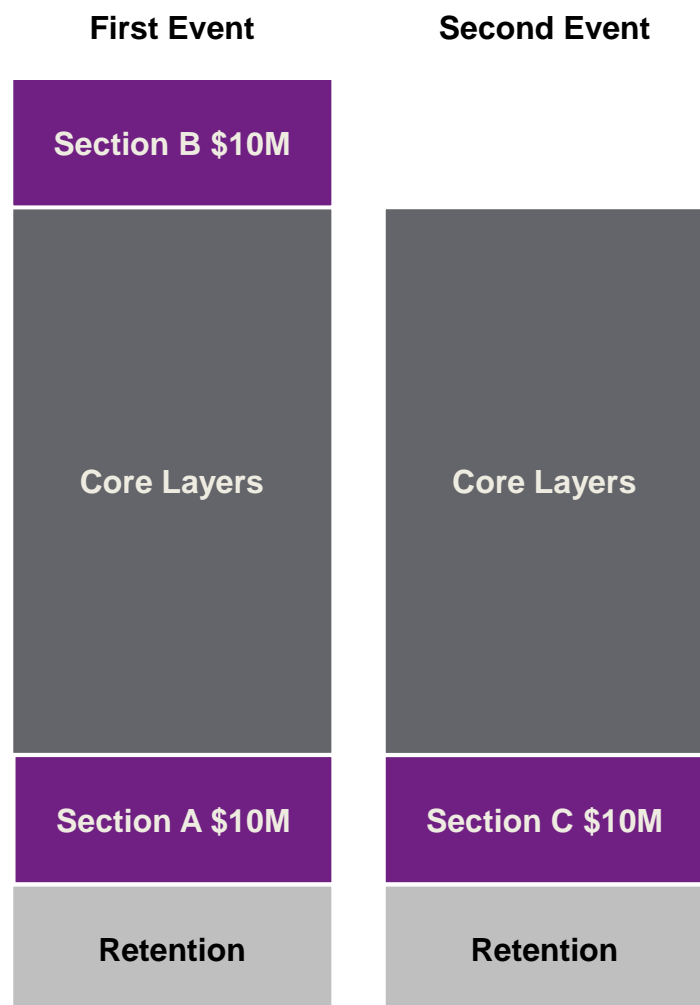


Per risk treaties paid significant losses on 2017 wildfires

2017 CA Wildfire example



Shared Limit



Sharing limit in multiple places in reinsurance structure

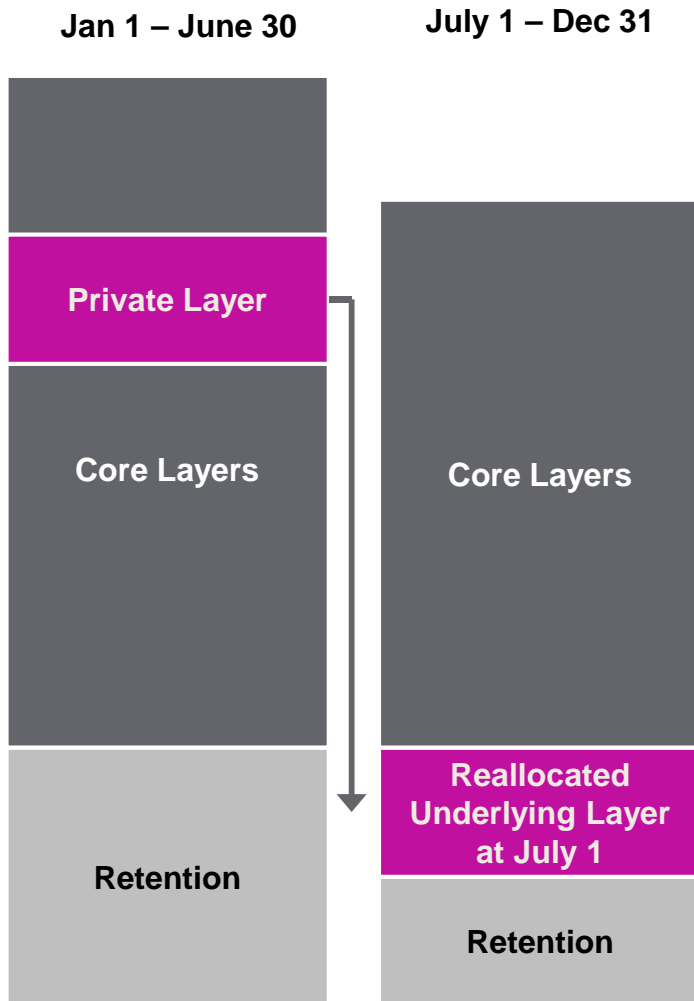
§ Example: One shared limit of \$20M recoverable:

- In a total reinsurance program loss (A & B) or
- Two or more smaller frequency losses (A & C)

§ Benefits

- Offers flexibility with both frequency and severity protection
- Combining limit creates cost savings; especially if part was minimum price
- Protects results by leveraging limit to apply more flexibly

Mid-Year Reallocation



§ Company wants to lock in earnings if non-peak cat losses prior to hurricane season come in under budget or increased rate provides dramatic premium growth (more money available to allocate towards risk transfer / reinsurance)

§ Leverage good Q1/Q2 results to secure annual earnings

§ Benefits

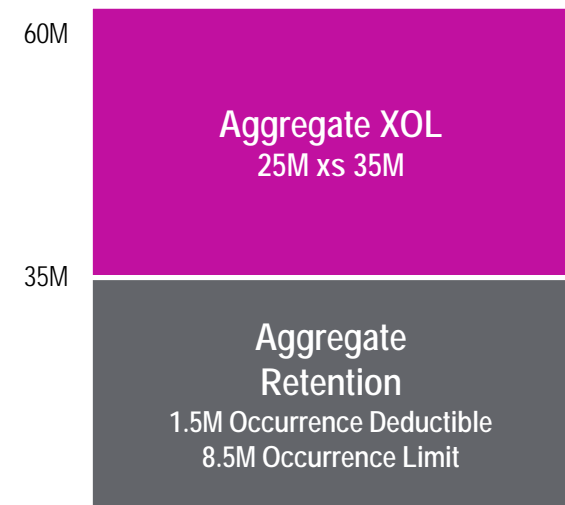
- Provides earnings protection without sacrificing or risking surplus

§ Higher probability of making earnings goal

- In a large event, the recovery is equivalent
- In small event, the cedant recovers where it otherwise wouldn't

Aggregate XOL

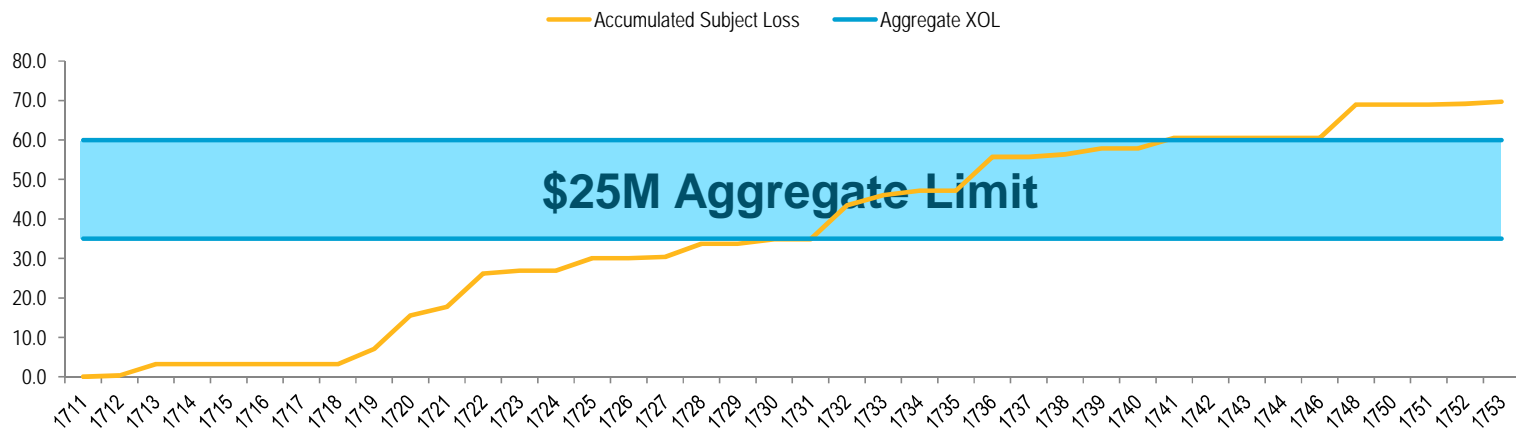
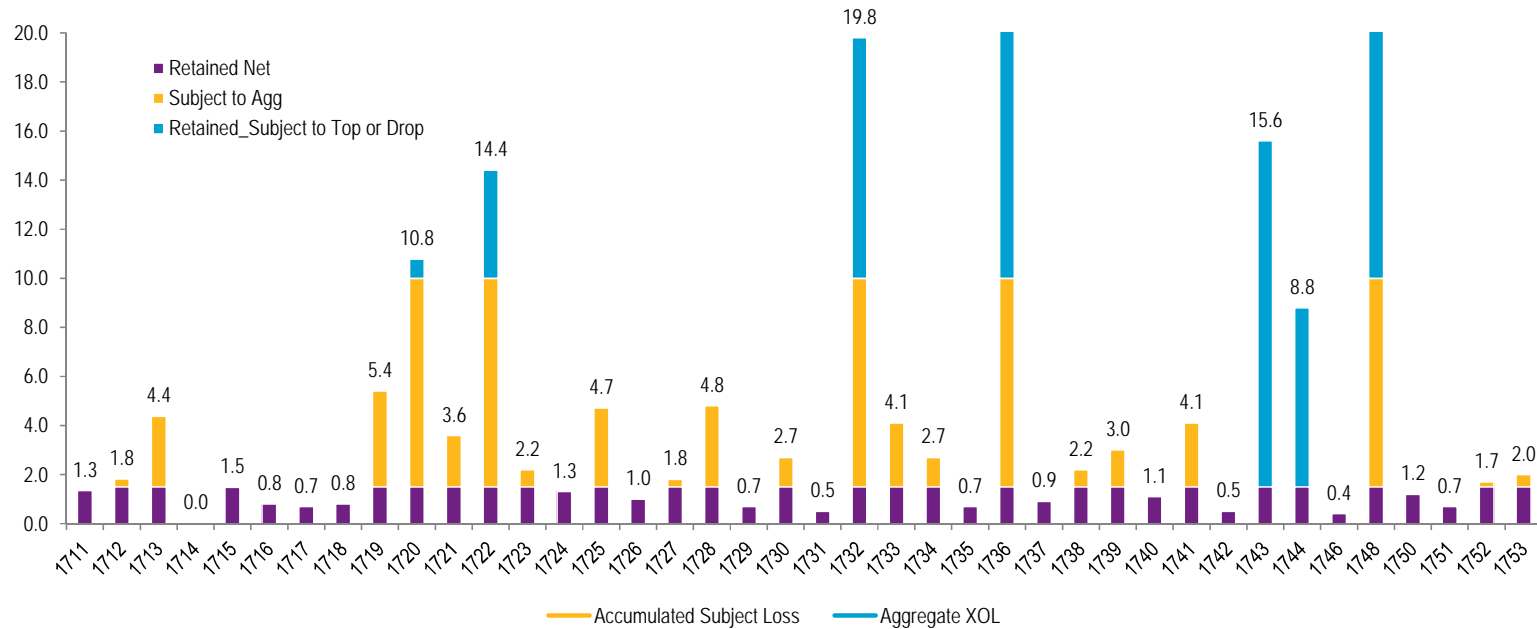
- § Mitigates accumulation of retained catastrophe loss
- § All loss within event parameters accumulate towards aggregate limit and retention
- § Event parameters typically line up with cat XOL retention to cover retained loss after aggregate retention has been satisfied
- § Often excludes Hurricane and Earthquake
- § Reinsurance pricing
 - Typically experience based pricing looking at 5-7 year period
 - Adjusting for exposure change is critical



Example:

Event deductible \$1.5M
Event limit \$8.5M
Aggregate retention \$35M
Aggregate limit \$25M

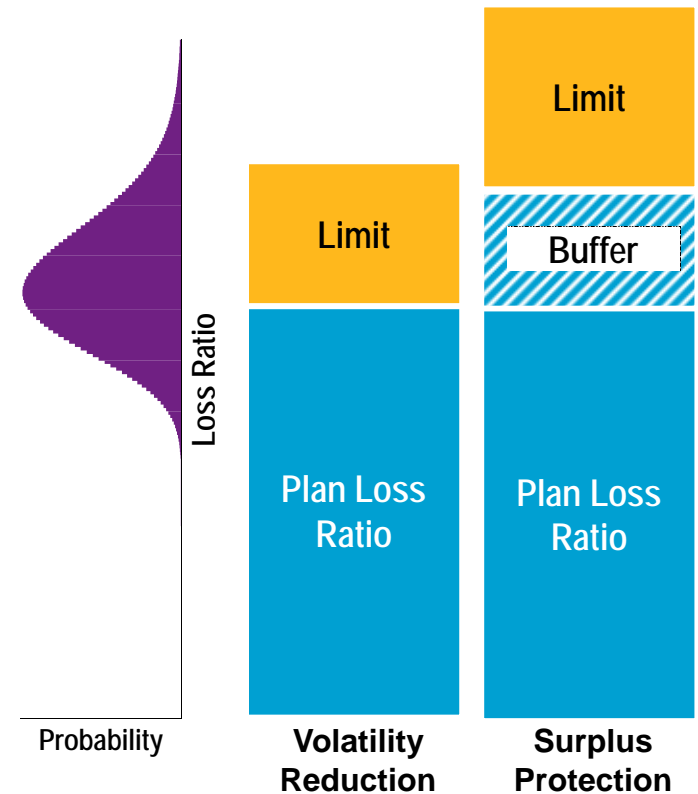
The need for aggregate



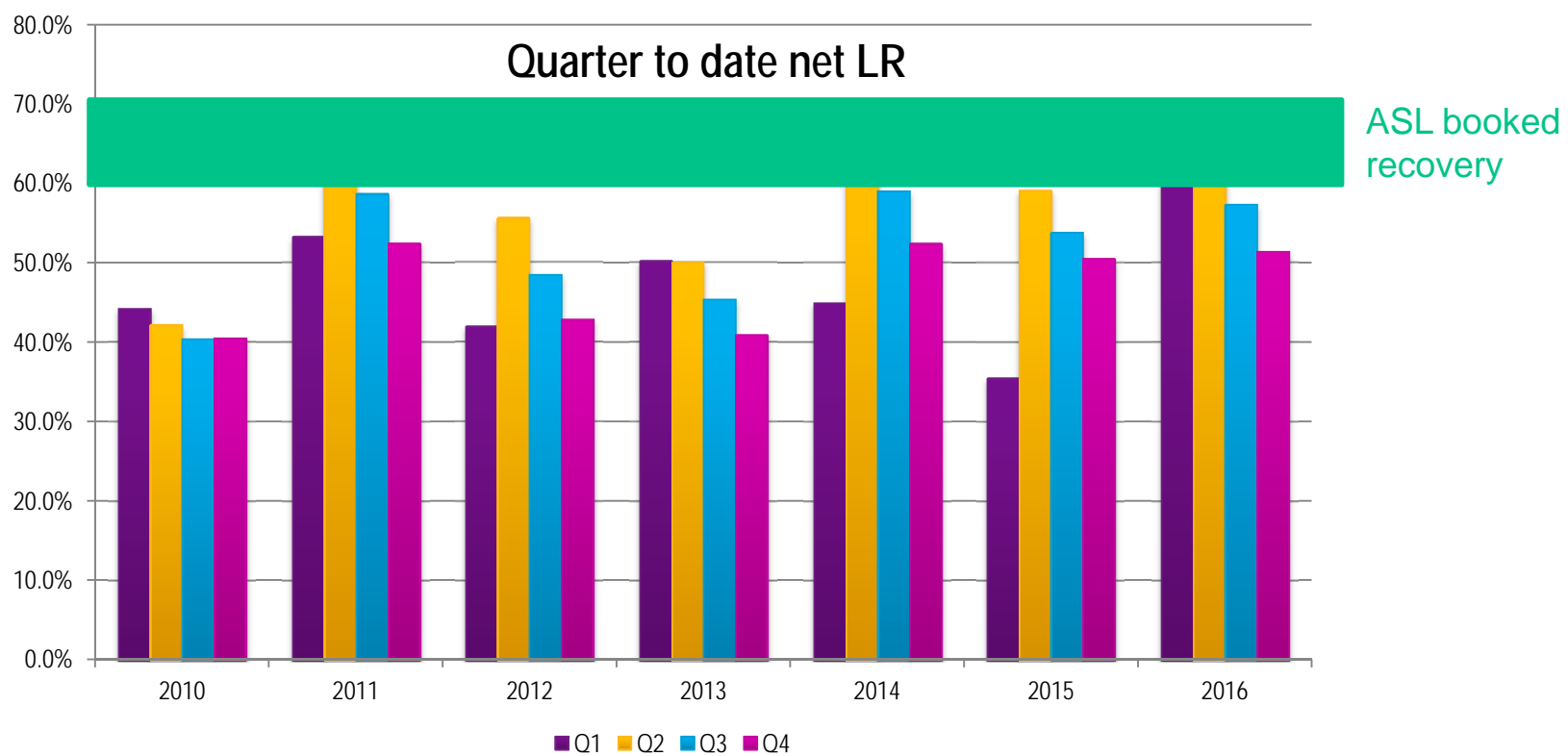
2017 ultimate loss estimates as of 11/30/17

Aggregate Stop Loss

- § Aggregate Stop Loss
 - § attach at a specified loss ratio for a fixed amount of limit
- § Benefits of ASL
 - § Best way to protect combined ratio by locking in earnings (no worse than “X”)
 - § Varying sources of earnings volatility
- § Most important terms that will drive cost:
 - § Expected net loss and ALAE ratio
 - § Net volatility
 - § Attachment point & limit



Smoothing benefit of ASL on quarterly financial statements



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