

Terrorism CAS ERM



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Efficacy of Private Market Capital Loss Scenarios

Loss Scenarios

- → **September 11, 2001**
 - \$32.5B (2001 dollars)
 - \$42.9B (2013 dollars)¹
- → **Largest Modeled Conventional Weapon Loss**
 - \$38.6B² – 10 ton truck bomb in Midtown Manhattan
- → **Largest Modeled NBCR Loss**
 - \$941B² – nuclear detonation Midtown Manhattan
- **(Re)Insurance Industry is not adequately capitalized to support large NBCR Losses**
- **Notes:**
 1. 2013 dollars based on Bureau of Labor statistics CPI Index
 2. The loss figures above assume a 100% Property take-up rate among commercial insureds
 3. Industry capital figures presented assume 100% of capital is available, or deployed, to cover terrorism. In reality, many (re)insurers – particularly capital/convergence markets – have little-to-no appetite to write terrorism because of correlation with financial markets loss.
- Source: Guy Carpenter Business Intelligence

Estimated
\$700B³ P&C
US (Re)Insurance
Dedicated
Capital

Estimated
\$322B
Global
Reinsurance
Dedicated
Capital

Estimated
\$100B
North American
Reinsurance
Dedicated
Capital

TRIPRA uncertainty impact on P&C Renewals

Started in 2013 and continues...

- Implementation of conditional TRIA endorsements (excl. NY, FL, GA)
- Tier 1 insureds have been facing increased costs, and/or greater Deductibles / SIRs
 - Workers' Compensation accumulation issues drove the earliest movement
 - Notable large account movement among the top 15 P&C carriers
 - A few carriers opportunistically writing business, while others non-renew
 - Some large accumulation risks are moving to the state funds
- Short-term or six month policies have been issued as a stop gap measure
 - WC: published NCCI form allows for price Δ mid-term should act expire*
 - Property: policies endorsed (manuscript form) allowing for price Δ if TRIA were to expire*
- Initial impact being felt most among smaller mutuals and regional writers that are highly TRIA dependent and have limited PHS comparatively
- All of the above and increased quoting and binding activity in the Stand Alone / Specialty terrorism market

Unique Challenges of Workers' Compensation Impact on Carriers is compounded

- Workers' Compensation is a state regulated compulsory line:
 - terrorism cannot be excluded, policies are written on an unlimited basis
 - NBCR perils are covered - and a significant concern to WC insurers
 - Arguably the most uninsurable risk(s)
 - Limited reinsurance capacity
- Modeled PMLs can easily pyramid into amounts greater than 10-20% of a carriers PHS
- Insurers continue to limit or reduce their exposure to large-scale terrorism events:
 - Pushing for higher prices anticipating TRIA expires or is reauthorized with significant changes
 - Reducing exposure by limiting the policies issued or the amount of capacity they will deploy in certain geographic areas
 - Less willing to underwrite the risks of employers in high-profile industries
 - Attaching endorsements that allow (subject to regulatory approval) for a unilateral mid-term re-underwriting and pricing if TRIA sunsets or is materially altered
 - Setting the policy expiration dates to coincide with TRIA's anticipated expiration

A.M. Best Background Rating Questionnaire

- Terrorism modeling questions can be more punitive relative to Nat Cat
- The highest of the following PMLs (as a % of PHS) can be stress tested against BCAR
 - **Natural *Cat probabilistic*** - unaltered cat model output
 - 1/100 Hurricane or 1/250 EQ (WC in the lower Random time)
 - **Terrorism 5-ton truck bomb *deterministic losses*** (RMS Spider approach)
 - At largest accumulations regardless of proximity to landmarks / designated targets
 - Best applies their probability of occurrence to these worst case scenarios
- **NBCR:**
 - A.M. Best continues to focus on the 5 & 6 Ton Truck Bomb
 - Companies are expected to monitor and be prepared to address it via the ERM section
 - Probabilistic Terrorism output (with and xNBCR) was an optional question last year
 - carriers receive no “SRQ PML credit” for purchasing NBCR coverage
 - S&P and Fitch do request Probabilistic terrorism (with NBCR)
- Additional rating impact and negative watch concern for those carriers having a large loss < \$100M aggregate industry loss TRIPRA trigger - and no TRIPRA cover

A.M Best had identified 34 carriers with significant terrorism exposure and TRIPRA dependency. Initially subject to negative outlooks / potential downgrades,

A.M. Best Background

NBCR Peer Management, and why it's getting more attention lately

- In the ERM section, AM Best does asks how carriers look at their NBCR accumulations relative to PHS
 - We do not know of any PML/PHS ratio that A.M. Best looking for
- In the P&C realm, NBCR coverage is very limited
 - When it is offered, it can be prohibitively priced
 - Captives may be utilized
- WC policies – compulsory coverage for types of events, including NBCR
 - Lack of flexibility in pricing for terrorism
 - Though state funds have even less flexibility in controlling exposure
- Life and health policies generally do not exclude NBCR
 - This is generally to remain competitive

Amid increased TRIRPA uncertainty A.M. Best has been increasing their NBCR ERM questions

Who benefits from TRIPRA? P&C Profile by PHS

- 2012 industry surplus for P&C carriers writing TRIA exposed business → \$590B
- Approximately 850+ carriers are subject to the Federal program

	TRIPRA Statistics by Policyholder Surplus (\$000s)						
	< 50M	50M to 100M	100M to 300M	300M to 500M	500M to 1B	1B to 5B	> 5B
Company Count	487	83	129	41	40	50	24
AVG. YE 2012 Comm. DEP	7,993	40,872	88,920	191,811	354,906	847,944	3,913,612
Avg. TRIPRA Deductible	1,598	8,174	17,784	38,362	70,981	169,589	769,862
Avg. Deductible as % of PHS	17.03%	11.65%	10.29%	9.63%	10.42%	7.90%	6.51%

- A higher % of the held capital for smaller to mid-sized insurers is required to meet the deductible requirements of TRIA (75+ have a TRIA deductible > 25% PHS)
- This group tends to depend on TRIA recoveries and contemplates TRIA protection notably more in their risk management strategies
- Many use the reinsurance to “buy down” their TRIA deductibles and cede some program co-insurance
- Carriers with TRIA deductibles > \$500M tend to manage their exposures to City and Zonal accumulations, rather than contemplating TRIA recoveries

Importance of Data Quality Correcting False Accumulations

- AM Best uses the 5 ton bomb for deterministic loss estimates
 - These estimates are often driven by the largest individual locations
- Does the location accurately reflect where the exposure actually is?
 - Campus locations
 - Large buildings with many wings
 - For workers' compensation,
 - All employees at company headquarters
- If the exposure is not accurately represented:
 - *Consider geographic spreading of risk*



Importance of Data Quality

Other Accuracy Checks

- Are building construction characteristics accurately reflected?
 - Structural type
 - Number of stories
 - For example, was a 5-story concrete building modeled as a 2-story wooden building?
 - Potentially significant difference in loss estimates
- For workers' compensation:
 - Is the maximum employee presence accurately reflected?
 - Do the model's default injury cost severities make sense?
 - Can the building accommodate the specified number of employees?

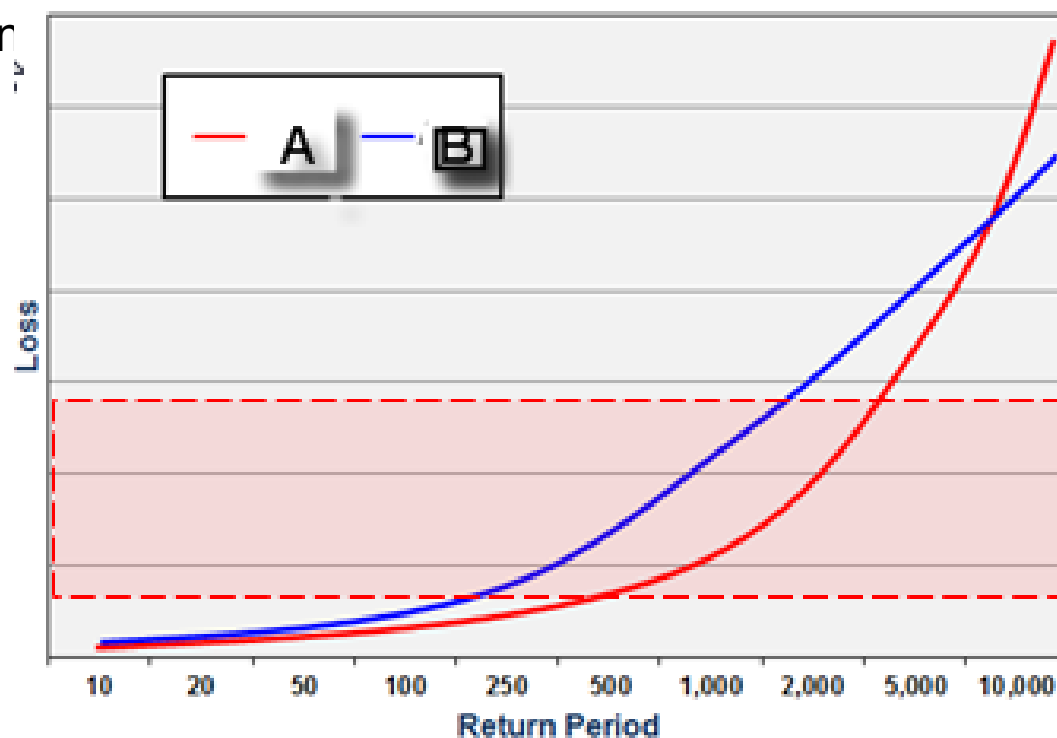


Terrorism Analytics

Probabilistic Terrorism Modeling

- Available in both RMS and AIR
- Probabilistic loss estimates
 - High-profile terrorism targets
 - Conventional and NBCR weapon
 - Property, WC, and LA&H

Return Period	OEP (\$000)	
	Conventional	NBCR
10 yrs	\$ 50	\$ -
20 yrs	\$ 1,200	\$ 26
50 yrs	\$ 5,648	\$ 18,562
100 yrs	\$ 15,742	\$ 60,411
250 yrs	\$ 37,482	\$ 168,350
500 yrs	\$ 89,633	\$ 287,605
1,000 yrs	\$ 174,250	\$ 668,464
5,000 yrs	\$ 226,125	\$ 1,109,625
10,000 yrs	\$ 598,567	\$ 2,209,855



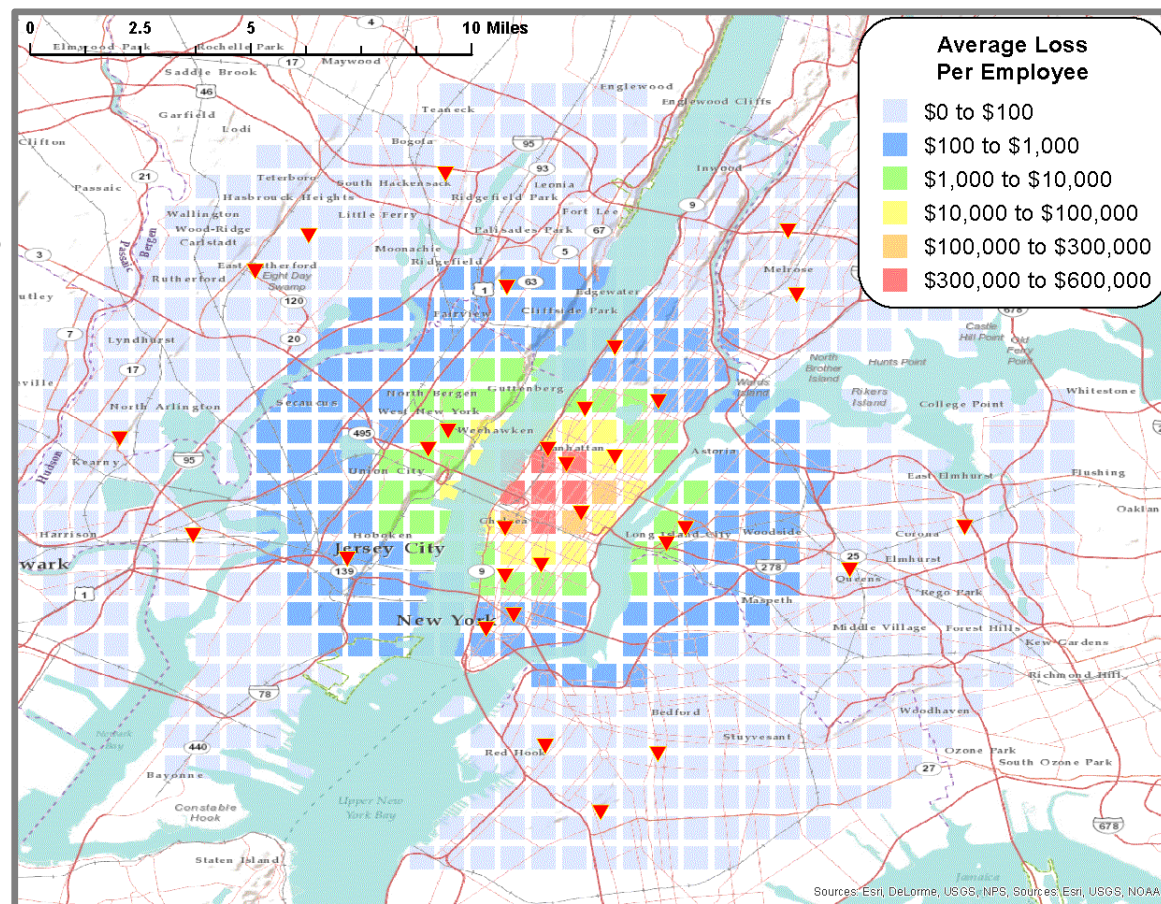
Probabilistic modeling offers a perspective on loss possibilities, benchmarking, underwriting effectiveness, reinsurance adequacy, and much more

Terrorism Analytics

Deterministic Terrorism Modeling

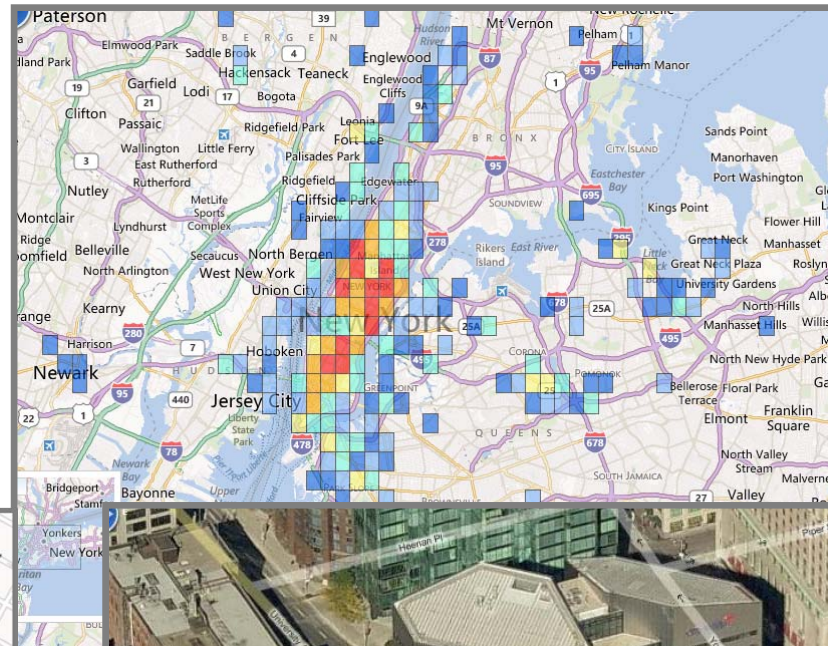
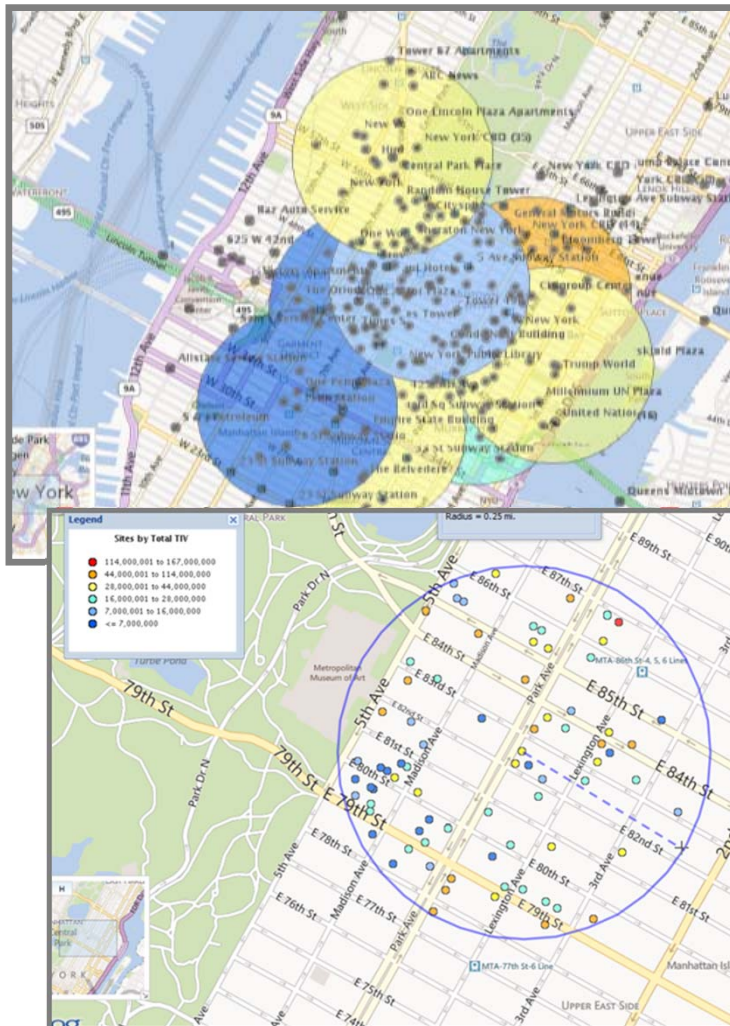
- What if?
- Loss estimates for specific terrorism scenarios
 - High-profile terrorism targets
 - Large portfolio accumulations
- AM Best SRQ
 - 5 ton bomb

Small Nuclear Bomb in Manhattan



Specific terrorism scenarios offer a solid perspective of loss possibilities, and the detail needed to manage them

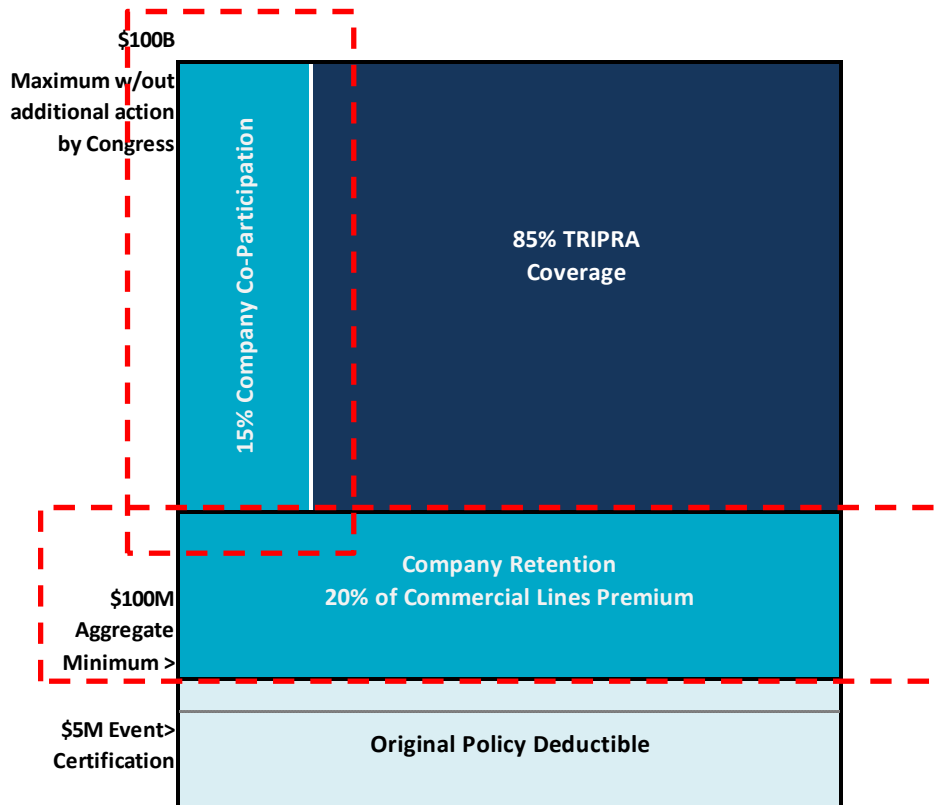
Terrorism Analytics Accumulation Management



Accumulation management, either around high-profile terrorism targets, or from a portfolio-accumulation standpoint

Standalone Terrorism Structures

Why and How Companies May Buy



- **Historically**, typical standalone terrorism buyers are regional/mutual companies with outsized Tier 1&2 exposures
- Strategically, they buy:
 - a. Down the company deductible
 - b. Limit the company TRIPRA co-par
 - c. For risk protection
 - d. Rating Agency BCAR Protection
- **Today**, larger “jumbo” clients are looking for solutions which expand vertical capacity and allow for more opportunistic expansion post 1/1/2015

Looming TRIPRA renewal and ratings agency action has changed buyer landscape. Larger carriers with heavy Tier 1 presence entering market and impacting supply/demand dynamic

TRIPRA Uncertainty Potential Strategies

- Review large insured exposure data and modeled output
 - Identify specific locations that can be impacted by notable % of PHS
 - Identify locations increasing the PML - that could be stress xTRIPRA
 - Refine Max Any One Time / Location exposures
- Reinsurance options to consider include:
 - Traditional XOL or Aggregate XOL - structured to attach within/above TRIPRA deductible
 - Option contracts / 24 month contracts to reserve capacity for 2015
 - Multi-line bundling of Cat programs to consolidate capacity
 - Expanded TRIPRA “Buy-down” the deductible and “buy-out” the co-par
 - with or w/o NBCR
 - Facultative - select locations/policies contributing to the largest PMLs
 - Expanded coverage via Property Cat reinsurance

Evolution of TRIA

Development of the private terrorism market

	TRIA 2002	TRIA Extension 2005	TRIPRA 2007
Termination	December 31, 2005	December 31, 2007	December 31, 2014
Make-available provision	Must make coverage available for certified acts of terrorism on same terms and conditions as for other covered risks	No change	No change
Covered acts	Foreign terrorism in the U.S. and on U.S. interests abroad. Includes an act of war for workers' compensation policies only.	No change	Foreign and Domestic terrorism in the U.S. and on U.S. interests abroad. Includes an act of war for workers' compensation policies only.
Certification level	\$5 million	No change	No change
Program trigger	\$5 million	\$5 million in 2006 (thru March 31, 2006) \$50 million in 2006 (after March 31, 2006) \$100 million in 2007	\$100 million in insured loss in a Program Year
Covered Lines	Commercial property and casualty (P&C) insurance (including excess insurance, workers' compensation and surety insurance)	Commercial P&C insurance (including excess insurance, workers' compensation and directors and officers insurance)	No change
Excluded	<ul style="list-style-type: none"> * Federal crop * Private mortgage * Financial guaranty * Medical malpractice * Health or life insurance including group life * Flood under NFIA * Reinsurance or retro 	Added Exclusions: <ul style="list-style-type: none"> * Commercial auto * Burglary and theft * Surety * Professional liability * Farm owners multiple peril 	No change
Insurer Deductible (% of direct earned premium)	15 percent in 2005	17.5 percent in 2006 20 percent in 2007	20 percent
Federal reinsurance quota share	90 percent in 2002-2005	90 percent in 2006 85 percent in 2007	85 percent
Insurance industry retention for mandatory recoupment	\$15 billion in 2005	\$25 billion in 2006 \$27.5 billion in 2007	\$27.5 billion
Cap on liability	\$100 billion	No change	No change

Evolution of the Federal Terrorism Risk

U.S. Senate & House of Representatives Outline (as of May 2, 2014)

	The Terrorism Risk Insurance Program Reauthorization Act of 2007	Terrorism Risk Insurance Program Reauthorization Act of 2014 (Senate) Banking Committee Members	The Terrorism Risk Insurance Modernization (TRIM) Act of 2014 (House) Outline of Discussions
Termination	December 31, 2014	December 31, 2021	December 31, 2017
Make-Available Provision	Must make coverage available for certified acts of terrorism on same terms and conditions as for other covered risks.	No change	January 1, 2016 – small insurers can opt-out of the mandatory “make available” requirement.
Covered Acts	Foreign and domestic terrorism in the US and on US interests abroad. Includes an act of war for workers’ compensation policies only.	No change	The act must be committed on behalf of any foreign person or foreign interest.
Certification Level	\$5 million	No change	<ul style="list-style-type: none"> January 1, 2015 – the Secretary of Treasury must consult with the Attorney General and the Secretary of Homeland Security (replaces the Secretary of State from previous legislation). Remove \$5 million threshold. The Secretary of Treasury must make a determination within 90 days to certify an event as an act of terrorism.
Program Trigger	\$100 million in insured loss in a program year.	No change	<ul style="list-style-type: none"> 2015- \$100 million 2016- \$250 million 2017- \$500 million Nuclear, biological, chemical, or radiological (NBCR) certified acts trigger at \$100 million.
Covered Lines	Commercial property/casualty insurance (including excess insurance, workers’ compensation and directors and officers insurance).	No change	January 1, 2016 – separate the definition of an “act of terrorism” into two categories: (1) NBCR acts and (2) non-NBCR acts.
Insurer Deductible (Percent of Direct Earned Premium)	20%	No change	<ul style="list-style-type: none"> January 1, 2016 – insurance marketplace retention amount to be the equal to the sum of the insurer deductibles for the proceeding program year for all participating insurers. Mandatory recoupment of federal payments for insured losses after the trigger and an insurer’s deductible have been met tat are equal to or below the aggregate industry deductible.
Federal Reinsurance Quota Share	85%	<ul style="list-style-type: none"> 2015 – 84% 2017 – 82% 2019 – 80% 	<ul style="list-style-type: none"> 2016 – 83% 2018 – 81%
Insurance Industry Retention for Mandatory Recoupment	\$27.5 million	<ul style="list-style-type: none"> 2015 - \$29.5 billion 2017 - \$33.5 billion 2019 - \$37.5 billion 	<ul style="list-style-type: none"> 2016 - \$31.5 billion 2018 - \$35.5 billion
Cap on Liability	\$100 billion	No change	January 1, 2017 – reduce to \$75 billion



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