AMERICAN ACADEMY *of* ACTUARIES

September 16, 2013

President's Working Group on Financial Markets: Terrorism Risk Insurance Analysis
Federal Insurance Office
Attention: Kevin Meehan
Room: 1319 MT
Department of the Treasury
1500 Pennsylvania Avenue, NW
Washington, DC 20220

Re: President's Working Group on Financial Markets: Terrorism Risk Insurance Analysis

Submitted through the Federal eRulemaking Portal: http://www.regulations.gov/

To the President's Working Group on Financial Markets:

The American Academy of Actuaries'[1] Terrorism Risk Insurance Subcommittee (Subcommittee) appreciates this opportunity to provide comments to the President's Working Group on Financial Markets (President's Working Group) in response to the July 16, 2013 request in the Federal Register Volume 78, Number 136.

General Comments:

Before addressing the specific questions presented in the Federal Register request, we note that insuring losses sustained as a result of acts of terrorism is different than insuring against most other risks. Terrorism risk lacks many of the characteristics of risks that are typically considered "insurable." A risk has six characteristics[2] for it to be considered insurable:

1. There must be a large number of exposure units;
2. The loss must be accidental and unintentional;
3. The loss must be determinable and measurable;
4. The loss should not be catastrophic;
5. The chance of loss must be calculable (ability to calculate expected frequency and severity to determine the proper premium); and
6. The premium must be feasible.

Risks like automobile and fire liabilities are good examples of insurable risks that fit the "ideal" (matching well all six of the criteria listed above), while earthquake and hurricane risks only possess some of the characteristics of insurability. Flood insurability and unemployment risks

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[1] The American Academy of Actuaries is a 17,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.
[2] *Principles of Risk Management and Insurance*, 12th edition, Rejda McNamera; pps 22-24.

generally do not meet many of the requirements and, as a result, have necessitated some level of public-policy intervention through governmental support. Terrorism risk similarly lacks several of the six characteristics of insurability. Insureds are largely unable to use loss-control techniques (shutters for windstorms, elevation for floods, etc.) to mitigate potential frequency or severity of events and are reliant on governmental agencies to reduce the chance of losses resulting from a terrorist attack.

The federal terrorism risk insurance program (TRIA) is the framework, which has the federal government as a backstop, that has been successful in bringing to and maintaining significant private sector capacity in the market. With no federal backstop, private sector capital in the market would not be assured. TRIA kicks in at a high level,[3] leading some to argue that, should a terrorism loss occur that is large enough to trigger federal TRIA coverage, it would be an extraordinary event, leading to calls for the federal government to step in regardless of the existence of a federal program.

TRIA established a framework to maximize private sector capital and help with an orderly government aid process in the aftermath of a large attack. For the above-stated reasons, the Subcommittee is supportive of reauthorization of the TRIA program.

TRIA was also formulated to include fiscal responsibility and includes recoupment provisions. At the same time, the program is not designed to cultivate a private market for terrorism risk insurance.

Responses to President's Working Group Solicitation for Specific Comments:

(1) Describe and explain in detail any and all possible ramifications from the termination of the Program on December 31, 2014, including any available evidence to support the predicted result, regarding:

(a) The availability and affordability of insurance for terrorism risk in the United States generally;

The current availability of terrorism risk insurance depends on the continued existence of a federal backstop. Affordability depends on price stability, which is not possible with sparse data and judgment-based rates. The termination of the TRIA program would limit current capacity. The Insurance Information Institute (III) estimates current market capacity, including insurers that would not be participating in covering terrorism risk at $607 billion as of the first quarter of 2013, up about 10 percent from 2010.[4]

In response to the request for comments on TRIA made by the President's Working Group in 2006, the Academy's Terrorism Risk Insurance Subgroup modeled several potential terrorism events in four major urban areas. The estimated insured losses ranged from $3 billion incurred

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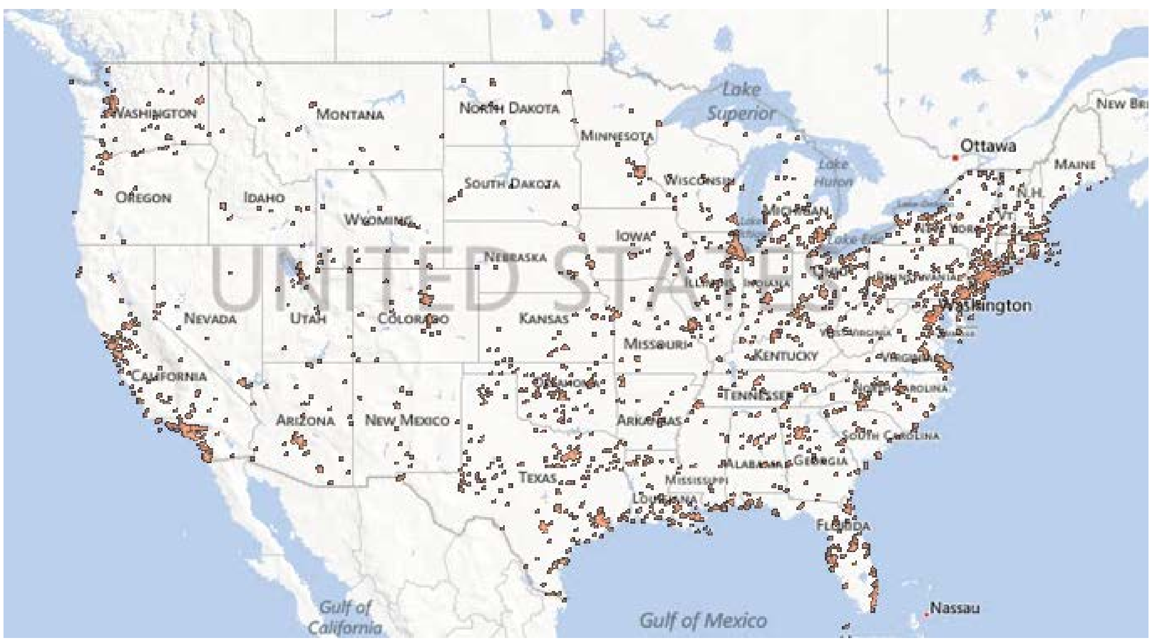
[3] Under the current iteration of the TRIA program, aggregate industry losses must exceed $100 million to trigger coverage. See http://www.naic.org/cipr_topics/topic_tria.htm.

[4] *Overview & Outlook for the P/C Insurance Industry: Trends, Challenges and Opportunities in 2013 and Beyond*. Farm Bureau Underwriting Managers' Conference; presentation available for download from www.iii.org/presentations/. III Farm Bureau Underwriting Conference, July 30, 2013.

as a result of a truck bomb attack in Des Moines to $778 billion (a very bad but not worst-case-scenario) due to a chemical, nuclear, biological, or radiological (CNBR) event in New York City. In today's dollars, capacity would likely be exceeded by the 2006 loss estimate of $778 billion; that would require the entire property and casualty insurance market to make its capacity available to cover a terrorism event, despite the fact that not all property and casualty insurers cover the applicable risks.

While the market might be able to sustain the losses associated with a single event, depending on its magnitude, the coverage of such an event would jeopardize the market's ability to handle day-to-day risks, and the market would not be able to handle a second major event until a substantial rebuilding of capital occurred. This is also premised on the assumption that no other extreme events, natural or man-made, would arise to strain current market capacity first. There were at least 15 terror attempts on U.S. soil in 2010 and 2011 alone.[5] According to the U.S. Department of Homeland Security, the terrorism threat against the U.S. at home and abroad continues to evolve and includes a focus on U.S. domestic targets that tend to be concentrated in certain geographic areas. Modelers for Aon Benfield have identified over 8,000 "hard" terror targets (major skyscrapers, financial institutions, government buildings, religious buildings, etc.) in the U.S.[6] The following map of a portion of the known targets clearly demonstrates the concentration issue:



Source: Aon Benfield database on potential targets

Terrorist attacks are difficult to predict, and therefore, insuring against them is difficult to accurately price, in part because terrorists can adjust their strategies in numerous ways, including an increase in both the scale of an attack and the likelihood of its success against efforts intended

[5] National Consortium for the Study of Terrorism and Responses to Terrorism (START), (2012). Global Terrorism Database [Data File]. Retrieved on Sept. 13, 2013 from http://www.start.umd.edu/gtd.
[6] See http://financialservices.house.gov/uploadedfiles/hhrg-112-ba04-wstate-eryan-20120911.pdf.

to mitigate terrorist-caused losses. The frequency of hurricanes or other natural disasters may change over time, but—unlike the activities of terrorist groups—they do not change to intentionally avoid efforts to mitigate the damage they may cause.

(b) The availability and affordability of insurance for terrorism risk in the United States specifically by line of business; geographic location, including the rating tiers defined by the Insurance Services Office, Inc.; and other relevant characteristics; and

Insurers require a reasonable expectation of an adequate return on the capital exposed to terrorism risk, or they will likely choose not to insure it. In the areas of the U.S. with the greatest terrorism risk exposure, the amount of capital required to ensure both the payment of claims and the rebuilding of capital necessary to remain in business following an event is typically beyond the capacity of the private insurance market. In these cases, it has been necessary to engage additional sources of capital, including federal and state governments, insureds, securities markets, and the public, along with insurers and reinsurers.

Additionally, while the insurance market has substantially increased its understanding of terrorism risk over the past 12 years, cost estimates are still largely qualitatively judgment based because the factors used to determine potential terrorism losses are varied, complex, and difficult to quantify. For most natural catastrophic risks, historic geological data is widely available. Making generally available the type of data related to terrorism risk for insurers to base their estimates on and thus charge actuarially fair premiums could pose national security concerns.

It is important to recognize the value of studying experience. However, in this instance, there have been no applicable losses under the TRIA program since its inception.[7] Furthermore, for other types of catastrophic losses, it is typical to examine data beyond 11 years – the amount of time elapsed since TRIA's implementation. For example, liabilities associated with workers' compensation mass tort losses could be outstanding for 20 years or more, well beyond the applicable policy year. When estimating the frequency of natural disasters, the data used often goes back 50 years or more.

According to a recent Marsh & McLennan Companies survey[8] of 17 industry segments, the health care, financial institutions, education, and public entity sectors comprise the segments with the highest (70 percent) TRIA purchase rates. Therefore, without the current TRIA program, and absent some other arrangement that changes the marketplace, these industry segments would likely experience price increases and capacity constraints, especially in major urban areas.

Workers' compensation insurance losses comprised more than 60 percent of the 2006 Academy Terrorism Insurance Subgroup potential loss estimate of $778.1 billion. Because insurers cannot exclude terrorism losses from workers' compensation policies, the disappearance of a federal backstop, without some other workable mechanism for terrorism risk insurance, could lead to disruption in the market for workers' compensation insurance, increased workers' compensation

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[7] As of this writing, the bombings that occurred during the Boston Marathon on April 15, 2013 have not been certified as a TRIA-triggering terrorist attack.

[8] See http://online.wsj.com/article/PR-CO-20130430-915243.html.

premium rates, and decreased availability of workers' compensation insurance, especially for the industries listed above and especially in urban areas.

(c) Additional specific effects on commerce in the United States.

Insurers include the cost of workers' compensation insurance and other risk exposures, including the terrorism risk exposure, in their pricing. Without TRIA or another means of providing a terrorism risk insurance market, the cost of this coverage could increase. Such an increase could ultimately be passed on to consumers/taxpayers. Thus, eliminating TRIA could increase taxpayer costs and result in many businesses being uninsured or underinsured. This could lead to a need for the federal government to intervene in the event of a major act of terrorism to forestall dire economic consequences, thus increasing taxpayer costs overall.

(2) If the Program were to continue beyond December 31, 2014, describe and explain in detail any revisions or modifications to the Program that would promote the availability and affordability of terrorism insurance, including any accompanying challenges that might arise from any proposed revisions or modifications to the Program. All views regarding the appropriate role of the federal government in supporting the availability and affordability of insurance for terrorism risk are welcome.

Our Academy Subcommittee has not modeled or contemplated any changes to the current TRIA program structure; however, we deem it wise to consider specifically adding the risk of cyber-terrorism to the list of covered risks. Americans' ever-increasing dependence on technology to engage in most aspects of our daily lives, including heavy reliance in commerce and business administration, makes cyber-terrorism a significant risk.

Many foreign governments around the world have implemented government or government-sponsored programs similar to the TRIA program to address terrorism risk exposures. Australia, Austria, Belgium, France, Germany, the Netherlands, Spain, Switzerland, and the United Kingdom have established various terrorism risk insurance programs intended to cover losses caused by a terrorist attack on their own soil.

The international community recognizes the importance of having a program in place to provide an essential framework. This framework is also essential for the U.S. If the TRIA program is allowed to sunset, a significant terrorist event could cause major economic and market disruptions.

(3) Describe and explain the ability of the insurance industry to model, quantify, and underwrite terrorism risk, and the resulting impact of such analysis on the availability and affordability of terrorism insurance, including an examination of the price (by line of business, location of risk, and other relevant characteristics) and coverage options for terrorism insurance.

As mentioned previously, terrorism risk does not perfectly meet the characteristics of an insurable risk as defined by the insurance market and standard risk management textbooks. When all of the requirements of an insurable risk are met, the market will seek an adequate rate (i.e., the market conditions will be such that pricing is appropriate, competition exists, etc.), commensurate with the amount of risk being assumed.

Rate Adequacy

As noted above, to participate in a market, insurers make a determination that there is a reasonable expectation that they will be able to successfully charge an "adequate rate," defined by actuarial principles[9] as a rate that will cover both the expected value of future costs to be paid and a reasonable return for their cost of capital. The main challenge for U.S. insurers in covering major terrorism losses is the enormous amount of capital required to ensure the payment of claims and the rebuilding of that capital once it is depleted. An event giving rise to $100 billion or more in insured losses is certainly plausible among terrorism events, in part because areas of high concentration are more likely to be targets than low concentration areas. This level of capital cannot be accumulated quickly from annual premiums. Because exposing that much capital to loss entails a high degree of risk, capital markets seek a significantly higher return to justify investment.

The following are critical components of an effective regulatory and/or statutory structure governing rate adequacy for terrorism risks:

- **Use of terrorism-specific catastrophe models** in ratemaking must be allowed. These models, albeit not perfect, are the best source of information for projecting losses. Actual historical data is too sparse to adequately estimate losses, so historical loss information must be augmented using information provided by models. Statutory allowance of models is necessary to achieve a reasonable loss and cost of capital component in rates. There is also a public policy component to encouraging the refinement and accuracy of models. It recognizes the proprietary nature of models for terrorism losses and protects the financial incentive to improve them. This is of particular importance because terrorism-loss models are not as developed as those currently in use by insurers for hurricane and earthquake exposures.

  The insurance industry can model individual hypothetical events, as detailed below:

  Modeling Concepts: Some commercial models embody principles of game theory that suggest patterns of attack and targeting, reflecting assumed priorities and objectives of would-be terrorists. Dispersion modeling attempts to measure the effects of biological attacks. Contagious disease modeling simulates the effect of a smallpox attack on the U.S. Casualty modeling simulates injuries relating to building occupants, and population in streets, etc. All of these modeling techniques are based on assumptions and lack supporting data from U.S. terrorist events.

- **Reflecting the cost of capital** is essential to receiving an adequate return for the cost of capital. Many state laws and regulations do not explicitly address this or else explicitly prohibit an appropriate cost of capital on retained risk exposures. In addition, because of the low frequency of terrorist events, regulated rates are often held below the true costs of the underlying capital required to cover the uncertainty, the volatility, and the risk of impairment or ruin due to the possibility of high losses. The "cost-of-capital component"

[9] See CAS Statement of Principles Regarding Property and Casualty Insurance Ratemaking: http://www.casact.org/professionalism/standards/princip/sppcrate.pdf.

is especially of significance to urban areas. Failure to appropriately reflect the cost of capital, which includes market-clearing prices for capital replacement, in effect ensures that insurance capital will be deployed elsewhere, ultimately increasing the size of the residual market. Nationally Recognized Statistical Rating Organizations (rating agencies) as well as regulators typically specify an amount of capital to be held for catastrophic events. For example, the current capital requirement by rating agencies contemplates hurricane losses in excess of $70 billion and earthquake losses in excess of $50 billion. If the TRIA program were allowed to expire without a workable alternative, we would anticipate rating agencies to impose an additional capital requirement for terrorism exposures.

- **Reflecting reinsurance costs** and other risk transfer funding in rates is essential. Reinsurance is a critical risk transfer tool for terrorism risk insurers, especially in urban areas. Insurers contractually transfer a portion of their risk to a reinsurer, and, in turn, reinsurers diversify the risk by offering reinsurance products covering many distinct geographic areas and types of business. The high cost of capital for commensurately high levels of terrorism risk exposure must be recognized and reflected in rates.

(4) Describe and explain, with supporting information where available, any additional insurance market considerations that could impact the long-term availability and affordability of terrorism insurance (e.g. implications for coverage of insurance for nuclear, biological, chemical, and radiological acts of terrorism; cyber acts of terrorism; and terrorism in workers' compensation policies).

The private reinsurance market does not currently provide products that would cover losses caused by chemical, nuclear, biological, or radiological (CNBR) attacks. To the extent that insurers cannot obtain reinsurance to limit their exposure to these risks, insurers will respond by reducing capacity. Over time, some risk-tolerant carriers could step in to fill the void, but past experience has shown that such risk-tolerant carriers are often underfunded.

Cyber-terrorism is seen as an important emerging risk. For example, utility suppliers and emergency medical care providers could be subjected to higher costs for terrorism risk insurance coverage or could be excluded all together.

Because losses resulting from terrorism events cannot be excluded from workers' compensation coverage, the workers' compensation line of business is likely to be subjected to price increases and capacity issues in high-concentration areas.

A major terrorist attack or series of attacks would have, by far, the largest impact on the long-term availability and affordability of terrorism risk insurance coverage. Insured losses from a single modeled event could total $778.1 billion.

***Summary of Results* – Insured Loss Estimates in Billions of Dollars (2006 Dollars)**

Scenario **Line of Business**	**New York City**	**Washington, DC**	**San Francisco**	**Des Moines**
Large CNBR Total	**778.1**	**196.8**	**171.2**	**42.3**
Auto	1.0	0.6	0.8	0.4
Commercial Property	158.3	31.5	35.5	4.1
Residential Property	38.7	12.7	22.6	2.6
Workers' Compensation	483.7	126.7	87.5	31.4
General Liability	14.4	2.9	3.2	0.4
Group Life	82.0	22.5	21.5	3.4
Medium CNBR Total	**446.5**	**106.2**	**92.2**	**27.3**
Auto	0.2	0.1	0.2	0.1
Commercial Property	77.8	15.7	17.1	2.0
Residential Property	10.3	3.1	6.9	0.4
Workers' Compensation	313.2	71.6	50.8	21.8
General Liability	7.3	1.5	1.6	0.2
Group Life	37.7	14.2	15.6	2.9
Truck Bomb Total	**11.8**	**5.5**	**8.8**	**3.0**
Auto	0.0	0.0	0.0	0.0
Commercial Property	6.8	2.1	3.9	1.2
Residential Property	0.0	0.0	0.0	0.0
Workers' Compensation	3.5	2.8	3.9	1.5
General Liability	1.2	0.4	0.7	0.2
Group Life	0.3	0.2	0.3	0.1

The American Academy of Actuaries' Terrorism Risk Insurance Subcommittee appreciates the assistance from AIR Worldwide in the development of these estimates.

(5) Explain and describe in general the demand (or "take-up") of terrorism insurance and provide specific data and information, where available, regarding the take-up rate by line of business, location of the risk, and other relevant characteristics.

Combining all types of terrorism coverage used by businesses in the U.S., not just under TRIA, take-up rates among firms increased from just 20 percent in 2003 to 60 percent since 2006.[10] The percentage of companies buying property terrorism insurance (the terrorism risk insurance take-up rate) has remained fairly constant since 2005 and has been in the low 60-percent range since 2009.[11]

Reinsurance Considerations

(6) Describe and explain in detail the long-term availability and affordability of private reinsurance for terrorism risk. Analyze, with supporting information, the impact of the Program, and any changes to the Program, on the private reinsurance market for terrorism risk, including any accompanying challenges that might arise from revisions or modifications to the Program.

The Academy Subcommittee is not in a position to provide a specific market analysis of reinsurance for terrorism risk. We can, however, offer the following general observations:

[10] See http://financialservices.house.gov/uploadedfiles/hhrg-112-ba04-wstate-emichelkerjan-20120911.pdf.
[11] See http://online.wsj.com/article/PR-CO-20130430-915243.html.

- According to the Reinsurance Association of America, “The amount of stand-alone terrorism treaty reinsurance capacity available in the private market is estimated to be $6-$8 billion, a figure that has remained largely unchanged in recent years.”[12]
- There is currently little reinsurance coverage of CNBR exposures.
- According to Marsh’s 2010 report on terrorism risk insurance, “More companies are securing terrorism insurance through their captives and are purchasing reinsurance to cover their retention or liability under TRIA.”
- Available limits per risk are lower in more metropolitan areas, especially where CNBR risks are included.
- While reinsurance market capacity has increased for exposures other than terrorism risk, the observations above are intended to be viewed independently of capacity changes occurring elsewhere in the reinsurance market.

Additional Considerations

(8) Describe and explain any other developments, considerations, or market issues that might affect the long-term availability and affordability of terrorism risk insurance.

The following are other relevant issues that the Academy Subcommittee would like to bring to your attention.

1. April 15, 2013 Boston Marathon Bombings

As of this writing, a determination on certification of the April 2013 Boston Marathon bombing as a TRIA-qualified event had not been made. While the program contains a $100 million aggregate loss trigger, and though total losses from Boston could be substantial, the $100 million threshold must be reached by aggregating only insurance losses that are subject to the Act.

In addition, as set forth by the TRIA statute, several key criteria must be met for a terrorist event to be certified; whether the Boston Marathon Bombing constitutes a test case for TRIA has not been determined.

2. Recoupment Changes Made in the 2007 Reauthorization – Impact on Small Companies

The original TRIA legislation provided that the Secretary of the Treasury could require all insurers to apply a “recoupment” factor to all policies, essentially to reimburse the government for its payout in the aftermath of a terrorist event. The recoupment factor was originally subject to a maximum of 3 percent. The 2007 reauthorization removed that cap. If the program is to be reauthorized again, the restoration of a maximum cap on recoupment might be considered. The elimination of the cap disproportionately affects small, often regional insurers because their policyholders will be paying relatively more to insure events that have a higher probability of occurring elsewhere in the country. There is currently no maximum on the amount that will be applied to future policyholders’ premiums.

[12] See http://financialservices.house.gov/uploadedfiles/hhrg-112-ba04-wstate-eryan-20120911.pdf.

3. Loss Mitigation

From a risk management perspective, an insured can manage the possibility of loss using a number of mechanisms. Some such mechanisms include avoidance, retention, loss control, and risk transfer (i.e., insurance). Because terrorism risk cannot be avoided, the following issues are important to consider:

a. Loss Control

Many insureds use loss control to reduce the frequency and/or severity of their losses. Since 2001, a number of prevention and mitigation efforts have been undertaken by the private sector. These measures include enhanced private security and screening of visitors to high-profile buildings, physical barriers to enter such buildings, and installation of security cameras. Insurers take mitigation efforts into account when underwriting risks; however, these mitigation efforts are unlikely to have much impact on the most damaging terrorist events. As such, the insured has little ability to materially reduce the risk of a significant terrorist threat.

b. Transfer and Retention (insurance with deductibles)

Since the enactment of TRIA, generally, insureds have been able to purchase terrorism risk insurance in amounts and under terms acceptable to them and their business affiliates.

c. Alternative Risk Transfer, such as catastrophe bonds

The Academy Subgroup's 2006 modeling work could not have been done without the expertise of representatives of AIR Worldwide, which directly supported a large portion of the transactions for raising risk capital through catastrophe bonds and has modeled most of the catastrophe bonds issued as services provided to investors.

Investors do not generally have the expertise in the risk analysis of extreme events that exists in insurance and reinsurance companies. Therefore, investors examine practices and risk assessments used by insurance companies, reinsurers, and rating agencies for guidance. Rating agencies have, to date, not indicated willingness to use probabilistic terrorism loss models for ratings purposes.

Identifying the same uncertainties posed by terrorism risk that are cited by insurers and reinsurers, as well as the fact that terrorism catastrophe bonds cannot currently be rated, investors have expressed little interest in such investment vehicles to date.

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We hope these comments help the President's Working Group in its study of factors relating to the availability and affordability of terrorism insurance and how those factors have affected the availability and affordability of terrorism risk insurance in the United States since 2010. We would be pleased to discuss these issues further and/or answer any questions you have related to this letter. In addition, we plan to generate additional analysis in the months ahead for policymakers and the public to utilize during the coming debate in Congress over the expiring TRIA program, and we would be happy to share that work with you.

If you have any questions about our comments, please contact Lauren Pachman, the Academy's casualty policy analyst, at Pachman@actuary.org or (202) 223-8196.

Sincerely,

Terry J. Alfuth, FCAS, MAAA, FCA
Chairperson, Terrorism Risk Insurance Subcommittee
American Academy of Actuaries