



MAY 12, 2016

CONTROLLING THE RISING COST OF FEDERAL RESPONSES TO DISASTER

UNITED STATES HOUSE OF REPRESENTATIVES, COMMITTEE ON TRANSPORTATION AND
INFRASTRUCTURE, SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND
EMERGENCY MANAGEMENT

ONE HUNDRED FOURTEENTH CONGRESS, SECOND SESSION

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**Committee on Transportation and Infrastructure
U.S. House of Representatives**

Washington, DC 20515

Bill Shuster
Chairman

Peter A. DeFazio
Ranking Member

Christopher P. Bertram, Staff Director

Katherine W. Dedrick, Democratic Staff Director

May 6, 2016

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Economic Development, Public Buildings, and
Emergency Management
FROM: Staff, Subcommittee on Economic Development, Public Buildings, and
Emergency Management
RE: Subcommittee Hearing on “Controlling the Rising Cost of Federal Responses to
Disaster”

PURPOSE

On Thursday, May 12, 2016, at 10:00 a.m. in 2167 Rayburn House Office Building, Members of the Subcommittee on Economic Development, Public Buildings, and Emergency Management will meet for a hearing titled “Controlling the Rising Cost of Federal Responses to Disaster.” The purpose of the hearing is twofold:

1. To examine and discuss data related to disaster costs, the trends observed over time, and the projections for the future given the policies in place today, including current federal disaster assistance programs and the requirements and effectiveness of those programs.
2. To begin exploring potential solutions and the principles that should be driving solutions to lower the overall costs of disasters and to help avoid devastating losses.

Witnesses include the Federal Emergency Management Agency (FEMA), National Emergency Management Association, National Institute of Building Sciences, National Association of Counties, and the Build Strong Coalition.

BACKGROUND

Disaster Losses and Federal Disaster Spending Have Increased Significantly

According to numerous studies, disaster losses and federal disaster spending have increased significantly over the last 50 years. In 2012, Munich Re, the world's largest reinsurance company, reported that between 1980 and 2011, North America suffered \$1.06 trillion in total losses, including \$510 billion in insured losses, and an increase in weather-related events five-fold over the previous three decades.¹ In 2005, it was reported that since 1952, the cost of natural disasters to the federal government more than tripled, as a function of gross domestic product.²

There are numerous causes that may be driving these costs including population growth and increased density in disaster-prone areas, changes in weather and fire events, and changes in disaster relief programs. In a recent report, FEMA acknowledged the increase in the number of extreme disaster events and increased vulnerabilities throughout the United States due to shifting demographics, aging infrastructure, land use, and construction practices.³

¹ Munich Re (2012). *Severe weather in North America – Perils Risk Insurance*. Munich, Germany: Muchener Ruckversicherungs-Gesellschaft.

² The Princeton University Geoscience 499 Class, *The Increasing Costs of U.S. Natural Disasters*. Geotimes, November 2005.

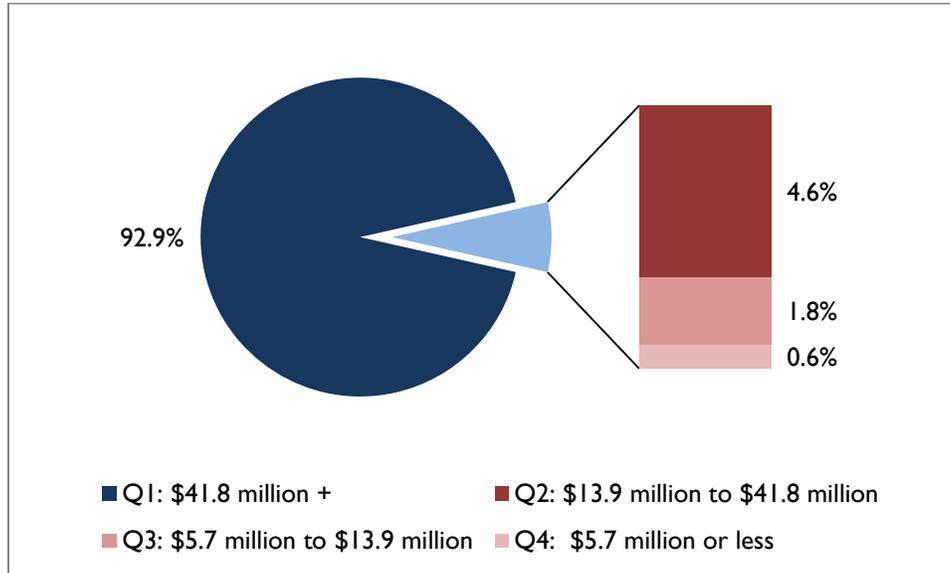
³ Federal Emergency Management Agency, *National Strategy Recommendations: Future Disaster Preparedness*. September 6, 2013. Available at [http://www.fema.gov/media-library-data/bd125e67fb2bd37f8d609cbd71b835ae/FEMA+National+Strategy+Recommendations+\(V4\).pdf](http://www.fema.gov/media-library-data/bd125e67fb2bd37f8d609cbd71b835ae/FEMA+National+Strategy+Recommendations+(V4).pdf).

A Few Disasters Account for Most FEMA Costs

The Congressional Research Service (CRS) analyzed data from over 1,300 major disasters since 1989, and adjusting for inflation, found that FEMA obligated more than \$178 billion for these disasters.⁴ However, CRS also found that 25 percent of all disasters account for over 92 percent of disaster costs.⁵ Therefore, the remaining 75 percent of smaller disasters constitute less than eight percent of FEMA disaster spending. See the diagram below:

Cost of Major Disaster Declarations by Size

FY1989-FY2014



Source: CRS analysis of FEMA obligation data.

⁴ CRS Memo *Data Analysis for House Transportation and Infrastructure Committee*, January 14, 2015.

⁵ *Id.*

The Increase in Disaster Declarations

FEMA is the federal government’s lead agency for preparing for, mitigating, responding to, and recovering from disasters and emergencies related to all hazards whether natural or man-made. When state and local resources are overwhelmed and the “disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments,”⁶ the Governor of the affected state may request that the President declare a major disaster. Below is a snapshot of declarations over the last decade:

Presidential Declarations in the Last Decade

| Year | Major Disaster Declarations | Emergency Declarations | Fire Management Assistance Declarations | Total |
|------|-----------------------------|------------------------|---|-------|
| 2016 | 22 | 3 | 6 | 31 |
| 2015 | 43 | 2 | 34 | 79 |
| 2014 | 45 | 6 | 33 | 84 |
| 2013 | 62 | 5 | 28 | 95 |
| 2012 | 47 | 16 | 49 | 112 |
| 2011 | 99 | 29 | 114 | 242 |
| 2010 | 81 | 9 | 18 | 108 |
| 2009 | 59 | 7 | 49 | 115 |
| 2008 | 75 | 17 | 51 | 143 |
| 2007 | 63 | 13 | 60 | 136 |
| 2006 | 52 | 5 | 86 | 143 |
| 2005 | 48 | 68 | 39 | 155 |

Source: <http://www.fema.gov/disasters/grid/year> viewed May 5, 2016.

The chart above illustrates a recent decline in the number of disasters since 2011, a year that experienced the most disaster declarations in history. However, CRS has analyzed the number of disaster declarations back to 1953 and observed a steady increase in disaster declarations through 2011.⁷ FEMA reports that over two thirds of all disasters were declared in the last two decades, between 1996 and 2013.⁸

⁶ 42 U.S.C. § 5170.

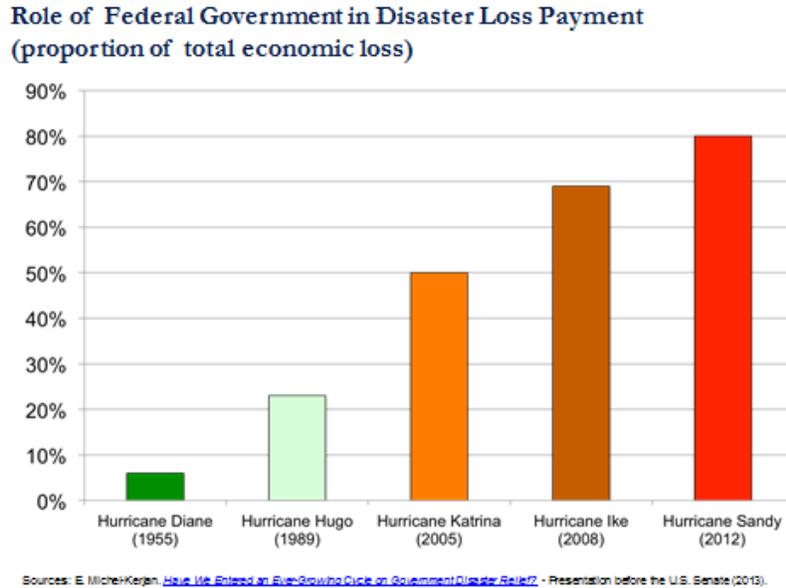
⁷ CRS Report 42702 *Stafford Act Declarations 1953-2011: Trends and Analyses and Implications for Congress* by Bruce R. Lindsay and Francis X. McCarthy.

⁸ Federal Emergency Management Agency. Available at <http://www.fema.gov/disasters/grid/year>.

The Growth of Federal Disaster Assistance

The Percentage of Disaster Costs Covered by the Federal Government is Increasing

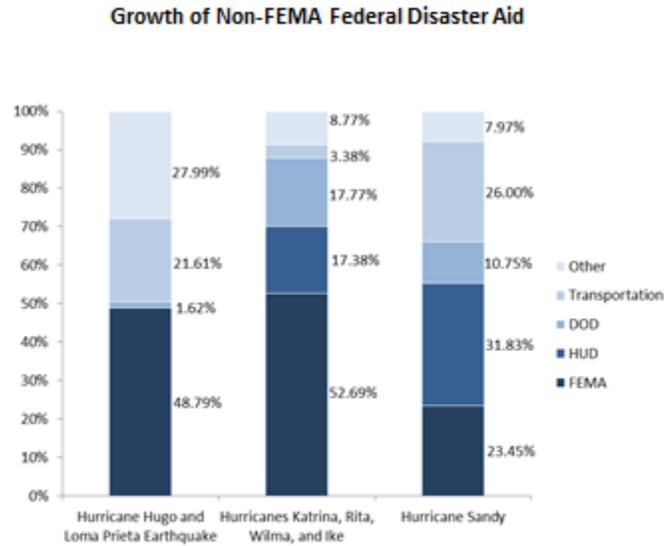
As the following diagram illustrates, the financial burden of disaster response has fallen increasingly on the federal government.



The Number of Federal Disaster Assistance Programs is Increasing

FEMA was established in 1979 to centralize and better coordinate the federal government's disaster activities, which had been scattered across the government and poorly coordinated in response to the Three Mile Island nuclear disaster and several other disasters. Over time, numerous other agencies have received authorities and appropriations for additional federal activities and programs focused on disaster recovery. These programs have differing legal authorities, eligibility requirements, and objectives.

The following diagram illustrates how over time the number of non-FEMA disaster assistance programs and the amount of funding made available for non-FEMA disaster assistance programs have grown.



Source: CRS analysis of supplemental appropriations laws passed following major disasters. For the three categories above, Hurricane Hugo and the Loma Prieta Earthquake included P.L. 101-100, P.L. 101-120, and P.L. 101-202. Hurricanes Katrina, Wilma, Rita, and Ike included P.L. 109-61, P.L. 109-62, P.L. 109-146, P.L. 109-224, P.L. 110-28, P.L. 110-116, P.L. 110-252, and P.L. 110-229. Hurricane Sandy included P.L. 113-2.

Most recently, the following programs have been significantly involved in disaster recovery, and as such, received funding in the wake of Hurricane Sandy.

- Housing and Urban Development (HUD) Community Development Block Grant Disaster Funds (CDBG-DR) – Congress can provide funding for disaster recovery through HUD’s CDBG Program. Most recently, funds were made available to provide non-competitive, nonrecurring assistance targeted at low-income areas impacted by disasters in 2011, 2012, and 2013.
- U.S. Department of Transportation (USDOT) Federal Transit Administration Emergency Relief Program (ERP) – The ERP’s purpose is to help states and public transportation systems pay for protecting, repairing, or replacing equipment and facilities that may suffer or have suffered serious damage because of an emergency, including natural disasters. The ERP is also intended to improve coordination between USDOT and the Department of Homeland Security (DHS) to expedite assistance to public transit providers in times of disasters and emergencies.
- U.S. Army Corps of Engineers – The Corps receives money for the rehabilitation, repair, and construction of projects. These funds are available to projects provided that they reduce future flood risk and support long-term sustainability.

Initiatives to Develop Solutions

The FEMA Disaster Assistance Reform Act of 2015 Establishes a Study of Disaster Costs

Given the trends in disaster costs and losses, the Committee has called for a complete assessment of these losses, what is driving these losses, what federal disaster assistance is available to individuals and the public and private sectors, the appropriate roles of each of those parties, and what public policy changes would result in fewer disaster losses and thus lower disaster-related costs.

On March 19, 2015, Chairman Barletta, Chairman Shuster, Ranking Member Carson and Ranking Member DeFazio introduced H.R. 1471, the FEMA Disaster Assistance Reform Act of 2015. On February 29, 2016, the bill passed the House. This bipartisan legislation establishes a comprehensive study to assess disaster costs and develop recommendations for reducing those costs; improves our Nation's emergency management capabilities and federal disaster programs; modernizes and strengthens critical components of our preparedness and response system; and supports emergency response personnel. Specifically, the legislation requires the National Advisory Council to conduct the comprehensive study and include policy recommendations to help reduce future losses.

FEMA's Proposal to Establish a Disaster Deductible

On January 20, 2016, FEMA published an advanced notice of proposed rulemaking in the *Federal Register* soliciting comments on a proposal to establish a predetermined level of financial or other commitment from a state or tribal government before FEMA will provide assistance under the Public Assistance Program when the President declares a major disaster.

FEMA believes the deductible model would incentivize states and tribal governments to make meaningful improvements in disaster planning, fiscal capacity for disaster response and recovery, and risk mitigation, while contributing to more effective stewardship of taxpayer dollars. For example, states and tribal governments could potentially receive credit toward their deductible requirement through proactive pre-event actions such as adopting enhanced building codes, establishing and maintaining a disaster relief fund or self-insurance plan, or adoption of other measures that reduce the state's or tribal government's risk from disaster events. The deductible model would increase stakeholder investment and participation in disaster recovery and building for future risk, thereby strengthening our Nation's resilience to disaster events and reducing the cost of disasters long term.

All comments were to be received by March 21, 2016. 148 comments were received.

Witness List

The Honorable Carlos Curbelo
U.S. Representative
26th District, Florida

The Honorable Joseph L. Nimmich
Deputy Administrator
Federal Emergency Management Agency

Mr. Brian Koon
Director, Florida Division of Emergency Management
President, National Emergency Management Association

Mr. Kevin Mickey, GISP, CTT+
Chair, Multihazard Mitigation Council
National Institute of Building Sciences
Director, The Polis Center, Indiana University Purdue University, Indianapolis

Ms. Sallie Clark
Commissioner, El Paso County, Colorado
President, National Association of Counties
International Association of Emergency Managers

Mr. Eric Nelson
Vice President, Catastrophe Strategy & Analysis
The Travelers Companies, Inc
Build Strong Coalition

STATEMENT

OF

THE HONORABLE JOSEPH NIMMICH
DEPUTY ADMINISTRATOR

FEDERAL EMERGENCY MANAGEMENT AGENCY
U.S. DEPARTMENT OF HOMELAND SECURITY

BEFORE
THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND
EMERGENCY MANAGEMENT
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

“Controlling the Rising Cost of Federal Responses to Disaster”

Submitted
By

Federal Emergency Management Agency
500 C Street, S.W.
Washington, D.C. 20472

May 12, 2016

Introduction

Good morning, Chairman Barletta, Ranking Member Carson, and members of this subcommittee. My name is Joseph Nimmich and I am the Deputy Administrator of the U.S. Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA). Thank you for the opportunity to testify today about FEMA's efforts to control the costs of federal disaster response and serve as good stewards of taxpayer dollars.

During a disaster response, FEMA's goal is to support disaster survivors through effective, efficient operations. We strive to meet the needs of disaster survivors and impacted communities while being careful with taxpayer money to get the most out of the funds we allocate. Though FEMA has plans in place to control costs during a disaster response, it is important to note that one of the most effective ways to accomplish a reduction in post-disaster costs is to build more resilient communities before a disaster strikes, thus reducing the physical and financial impacts of the event.

FEMA's efforts are driven by our 2014-2018 Strategic Plan. The plan was developed with hundreds of FEMA employees and external partners who are now working together to execute the plan's five strategic priorities:

- Be survivor-centric in mission program and delivery
- Become an expeditionary organization
- Posture and build capability for catastrophic disasters
- Enable disaster reduction nationally; and
- Strengthen FEMA's organizational foundation

In my testimony today, I will outline some of FEMA's programs dedicated to reducing risk across the country. I will also review our efforts to control FEMA's administrative disaster response costs. Finally, I will discuss our proposal to update the Public Assistance (PA) program requirements by introducing a Disaster Deductible concept, which aims to better apply state, territorial, and tribal financial capabilities while incentivizing resilience and mitigation practices.

Risk Reduction: Lessening the Physical and Financial Impacts of Disasters

Mitigation efforts taken before disasters strike can significantly lessen their financial impacts on the nation. The most effective mitigation tools include establishing stringent building codes and standards for the local environment, thus ensuring property is built to insurable levels.

The National Institute of Building Sciences' Multi-hazard Mitigation Council estimates that for every dollar FEMA invested in mitigation between 1993 and 2003, society as a whole saved four dollars due to reduced future losses. Mitigation programs save the American public an estimated \$3.4 billion dollars annually through a strategic approach to natural hazard risk management, including the value of more stringent building codes.

FEMA has made significant strides in the last few years, bringing the larger mitigation community together around shared doctrine and providing communities the funding, tools, and information they need to make informed, data-driven decisions that minimize their risk.

Federal Hazard Mitigation Assistance (HMA) Programs

FEMA oversees and manages three HMA programs: the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program and Flood Mitigation Assistance (FMA) program, all of which provide funding to state, local, tribal, and territorial governments for hazard mitigation projects. Local governments, and tribal governments, when acting as sub-applicants, are responsible for applying for funding through the state, managing approved projects, and maintaining records. States manage the overall mitigation program within the state, establishing funding priorities and selecting projects for funding based on those priorities.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) serves as the foundation for national efforts to reduce the loss of life and property from floods, the most costly and frequent disaster in the United States. The program identifies areas at risk for flooding and makes flood insurance available in participating communities. The NFIP works in close partnership with private insurance companies to market, sell, administer, and adjust claims for policyholders. By encouraging mitigation and floodplain management efforts, the NFIP is estimated to save the nation \$1.6 billion annually in avoided flood losses.

FEMA also administers the Community Rating System (CRS) to incentivize communities to implement floodplain management practices by offering lower NFIP insurance premiums to participating communities. These practices can include: requiring new buildings to be constructed above the base flood elevation; maintaining floodplain areas as open space; and educating the public on best practices.

Encouraging Mitigation throughout the Nation

As part of FEMA's effort to enable disaster risk reduction nationally, FEMA leverages its partnerships, programs, risk information, and tools to advance risk-based decision making across the nation. This effort helps build community resilience by ensuring a common risk picture, better targeting of resources, and a collaborative national effort to build the capabilities that will best address targeted risk areas. Focus areas to enable disaster risk reduction nationally include:

- Enabling better, risk-informed decision-making by improving the quality, accessibility, and use of risk information and allowing for more data-driven decision making. For example: by updating flood hazard maps to include advisory base flood elevations (ABFEs) when appropriate after a major flood event, and by continued implementation of the Threat and Hazard Identification and Risk Assessment (THIRA) process.
- Encouraging our state, local, tribal, and territorial partners to adopt up-to-date, stringent building codes to address hazards in their area.
- Integrating the Public Assistance and HMA programs so they work together and concurrently. By folding mitigation into the rebuilding process of damaged public infrastructure, federal dollars spent now will foster a more resilient community before the next disaster.

On January 14 2013, the House passed H.R. 219, the *Sandy Recovery Improvement Act of 2013 (SRIA)*. Pursuant to H. Res. 23, the text of H.R. 219 was added to H.R. 152, the *Disaster Relief Appropriations Act, 2013*, which after passing the House and Senate was signed into law by President Obama on January 29, 2013 as P.L. 113-2. SRIA authorized several significant

changes to the way FEMA delivers disaster assistance, including directing FEMA to streamline HMGP activities and implement the program in a timelier manner. SRIA, and the additional authorities it provided, continues to aid efforts to emphasize and improve mitigation across the nation.

On January 30, 2015, the President issued Executive Order (E.O.) 13690 which amended E.O. 11988 and established the Federal Flood Risk Management Standard (FFRMS). The FFRMS seeks to improve floodplain management by encouraging the use of natural features and nature-based approaches in the development of alternatives for Federal actions, and by providing a higher vertical elevation and corresponding floodplain, where appropriate, to address current and future flood risks. E.O. 13690 requires each agency, in consultation with the Water Resources Council, Federal Interagency Floodplain Management Task Force, FEMA, and Council on Environmental Quality, to issue or amend existing regulations and procedures to comply with the Order. FEMA proposes to amend its regulations addressing floodplain management and protection of wetlands to comply with this requirement.

Supporting Hazard Mitigation Planning

Mitigation plans are the foundation for effective hazard mitigation at the state, local, tribal, and territorial levels. The mitigation planning process includes hazard identification and risk assessment, which help planners create a comprehensive mitigation strategy for reducing risks to life and property. A mitigation plan identifies a range of specific actions and projects being considered to reduce risks to new and existing buildings and infrastructure. The plan also outlines how these activities will be prioritized, implemented, and administered.

FEMA's Hazard Mitigation Grants and Planning Group supports state, local, tribal and territorial participation in the Agency's mitigation programs, and provides technical assistance as they develop multi-hazard mitigation plans. FEMA also provides funds for communities to develop plans under FEMA's HMA programs. These funds are provided to help state, local, tribal, and territorial governments with the resources they need to develop mitigation plans, which are required for receipt of HMA funding.

Reducing Administrative Costs during Disaster Responses

In our 2014-2018 Strategic Plan, FEMA outlined a goal to: "By the end of 2018, reduce the average annual percentage of administrative costs for field operations, as compared to total program costs, by five percentage points."

Over the past few years, FEMA instituted several changes to the way we manage disaster operations that have reduced administrative costs and increased operational efficiencies while ensuring continued focus on improving the delivery of disaster assistance to communities and survivors. These changes include:

- Creating and providing, as a management oversight tool, recurring tracking reports on disaster spending.
- Establishing "virtual" Joint Field Offices (JFOs) at existing Regional Offices and combining field operations for multiple disasters when it makes sense for both FEMA and the communities and survivors affected, thereby avoiding and saving significant costs including, but not limited to: facilities, security, communications, and travel.

- Improving the way FEMA manages information technology requirements, including telecom services, to reduce costs and enhance the delivery of services to survivors.
- Centralizing administrative functions when appropriate to standardize processing, increase customer service, and reduce costs, particularly travel and personnel costs, including overtime.
- Changing the way we manage disaster staff overtime to improve both operational efficiencies and substantially reduce overtime costs.
- Making increased use of locally-hired disaster staff at JFOs and disaster closeout facilities to reduce salaries and travel costs.
- Improving the utilization of FEMA Corps and Incident Management Cadre of On-Call Employees (CORE).

To further institutionalize these changes and meet our goal, in 2016, FEMA developed the Plan to Reduce Disaster Administrative Costs. This plan describes FEMA's approach to managing administrative costs on disaster operations; identifies work underway to develop processes, policies, and guidance to improve disaster management agency-wide; and explains how FEMA will define and measure disaster administrative costs and hold itself accountable to the Strategic Plan. Specifically, FEMA is improving business processes involved in managing its disaster grant programs; creating additional doctrine and directives for field operations to increase standardization; and creating greater transparency in administrative cost reporting to assist leaders across the agency in managing disaster costs.

While FEMA is aggressively pursuing disaster administrative cost reductions, the Agency will continue to be aggressive in supporting rapid stabilization of disasters, ensuring the provision of life-saving and life-sustaining support and the transition of survivors into interim housing is neither slowed nor impeded in pursuit of efficiency.

Disaster Deductible Concept

FEMA is committed to looking towards the future for new opportunities to more effectively implement our programs and reduce disaster risk throughout the nation. Members of Congress, the Government Accountability Office (GAO), and the DHS Office of Inspector General (OIG) have issued audits and reports recommending that FEMA consider changes to the Public Assistance declaration process, concluding that the current per capita indicator is artificially low and an insufficient measure of state, local, tribal, and territorial capability.

FEMA agrees that we must more accurately assess states' capabilities and capacities, and encourage and incentivize states to improve their ability to respond to disasters. To this end, FEMA is exploring a Disaster Deductible concept that, if executed, would enable us to better assess capacity to rebuild public infrastructure following a disaster event, while also creating incentives for states to build capabilities and engage in mitigation strategies to improve resilience before a disaster occurs.

With the Disaster Deductible concept, states would have to meet a predetermined financial commitment, similar to meeting an insurance deductible, as a condition of receiving post-disaster Public Assistance for restoration of damaged facilities. This deductible could be significantly reduced, however, prior to any disaster through credits provided for state investments in

resilience, such as adopting standardized and enhanced building codes or investing in mitigation projects. Most, if not all, states are already investing in resilience and the provision of credits would formally recognize, incentivize, and establish such investments as best practices across the nation.

The Deductible concept would add predictability for states ahead of disasters by allowing them to know in advance the financial commitment they would be expected to provide prior to receiving federal disaster assistance under the PA program. This would allow states to better plan and budget for response and recovery. The concept could also incentivize states to implement mitigation strategies and promote risk-informed decision-making that will build resilience while also reducing the costs of future events for both states and the federal government.

This would be a significant change to how we currently implement the PA program, and for that reason we are engaging our partners at the very beginning of this process for their input. From January to March 2016, FEMA solicited comments through an Advance Notice of Proposed Rulemaking (ANPRM) on the Deductible concept, including how FEMA might calculate a state's Deductible, the scope of the financial commitment that might be required, how states could satisfy the Deductible, how this concept could influence change, implementation considerations, and the estimated impact on the states' and the nation's risk profiles.

During the 60-day public comment period, FEMA received 150 responses. FEMA is currently evaluating this extensive input to refine the Deductible concept and develop a plan for further public engagement that may include publication of a Notice of Proposed Rulemaking (NPRM) in the coming months. An NPRM would provide a detailed proposal for a Deductible program that would include an explanation of how Deductible amounts would be calculated, identify specific credits states could apply for, and detail how the Deductible would be applied post-declaration.

Conclusion

FEMA strives to build a more resilient nation and support disaster survivors while being good stewards of taxpayer dollars. We continue to look for innovative ways to incentivize risk reduction, promote hazard mitigation planning, and efficiently implement our recovery programs in order to reduce both the risks and costs to the American taxpayer.

Thank you for the opportunity to testify today. I look forward to any questions the subcommittee may have.



Statement of

The Honorable Sallie Clark
Commissioner, El Paso County, Colorado
on behalf of the National Association of Counties

before the

Committee on Transportation and Infrastructure's Subcommittee on
Economic Development, Public Buildings, and Emergency Management
U.S. House of Representatives

for the hearing

“Controlling the Rising Cost of Federal Responses to Disaster”

May 12, 2016

Washington, D.C.

Thank you, Chairman Barletta, Ranking Member Carson and members of the U.S. House of Representatives' Committee on Transportation and Infrastructure's Subcommittee on Economic Development, Public Buildings, and Emergency Management for this opportunity to testify on "controlling the rising cost of federal responses to disaster."

My name is Sallie Clark and I serve as President of the National Association of Counties (NACo). I am an elected county commissioner from El Paso County, Colorado and have served the residents of my county in this capacity since 2005.

About NACo

NACo is the only national organization that represents county governments in the United States, including Alaska's boroughs and Louisiana's parishes. Founded in 1935, NACo assists America's 3,069 counties in pursuing excellence in public service to produce healthy, vibrant, safe and resilient communities.

About America's Counties

Counties are highly diverse, not only in my state of Colorado, but across the nation, and vary immensely in natural resources, social and political systems, cultural, economic and structural circumstances, and public health and environmental responsibilities. Counties range in area from 26 square miles (Arlington County, Virginia) to 87,860 square miles (North Slope Borough, Alaska). The population of counties varies from Loving County, Texas, with just under 100 residents, to Los Angeles County, California, which has a population that, at close to ten million people, exceeds that of most states. Overall, of our nation's 3,069 counties, approximately 50 percent have populations below 25,000. At the same time, there are more than 120 major urban counties, which collectively provide essential services to more than 130 million people each day. If you've seen one county, you've seen one county, and there are 3,068 more to go.

Counties also often serve as our nation's first line of defense before and after disasters strike. While state statutes and organizational structures vary, local emergency management responsibilities are most commonly vested in county governments. Following a disaster, local elected officials are often first on the scene, along with our emergency managers – who play a key role in coordinating local emergency management efforts and working to mitigate damage from disasters. Other key county staff involved in pre- and post-disaster efforts include local police, sheriffs, firefighters, 911 call center staff, public health officials and public records and code inspectors. In the aftermath of disasters, we coordinate and help fund clean-up, recovery and rebuilding so that our residents can return to their lives as quickly as possible.

Furthermore, because counties are major owners of public infrastructure, we are also uniquely positioned to mitigate against disasters before they occur, so that their impact on our communities and residents' lives is decreased. Collectively, we own 45 percent of America's roads, nearly 40 percent of bridges, 960 hospitals, more than 2,500 jails, more than 650 nursing homes and a third of the nation's airports. We also own and maintain a wide variety of public safety infrastructure, including roadside ditches, flood control channels, stormwater culverts and pipes, Municipal Separate Storm Sewer Systems (MS4), and other infrastructure used to funnel water away from low-lying roads, properties and businesses.

About El Paso County, Colorado

El Paso County lies in east central Colorado and encompasses more than 2,100 square miles, about twice

the size of the state of Rhode Island. While the county is considered urban, with a population close to 640,000, it features a diverse mix of urban, suburban and rural areas, including 113,857 acres of federal lands. The western portion of El Paso County is extremely mountainous, while the eastern portion is largely prairie land with strong agricultural components.

I am especially grateful for this opportunity to offer the local perspective on the topic of disasters, because in the past several years, El Paso County has been devastated by a seemingly unending series of wildfires and floods that have upended and – in the most tragic cases – taken our residents' lives, strained our local economy, fundamentally changed the landscape of our county and caused enough damage to prompt four presidential disaster declarations. The 2012 Waldo Canyon Fire, the most destructive in Colorado's history at the time, burned from June 23 to July 10, 2012 in the Pike National Forest and its surrounding areas. The fire ultimately destroyed over 18,000 acres and 436 homes, forcing the evacuation of more than 32,000 residents in El Paso County.

In 2013, as we were working to recover from the Waldo Canyon Fire, we were hit by the Black Forest Fire, which surpassed its predecessor in scale and remains the most destructive wildfire in Colorado history. Over a nine-day period, over 14,280 acres (22.31 sq mi) were burned, at least 509 homes were destroyed, and we lost two of our residents. The evacuation area covered 94,000 acres (147 sq mi), 13,000 homes and 38,000 people, and we had to establish three shelters for those affected by wildfires. At the end of this horrific ordeal, the value of lost homes in El Paso County totaled over \$90 million and the cost of fighting the fire alone was estimated at over \$9 million.

In September 2013, just months after the Black Forest Fire, Colorado's Front Range was hit with storms resulting in catastrophic flooding, in some places causing landslides and mudslides, which affected an area stretching from Colorado Springs in El Paso County all the way north to Fort Collins, spanning 21 counties overall. 1,852 homes were destroyed, another 28,363 homes were damaged, and more than 18,000 residents were evacuated – some of whom are still unable to return over two years later. All told, 10 lives were lost in the disaster, and the value of property lost has been estimated at nearly \$4 billion, including \$600 million in watershed recovery costs and \$624 million in housing costs alone.

Between May 4 and June 16, 2015, the state of Colorado was again hit by a series of severe storms, coupled with tornadoes, flooding, landslides and mudslides that resulted in another presidential disaster declaration covering El Paso County and 14 other Colorado counties. Colorado Springs alone suffered about \$8 million in damages between May 3 and May 12, leading Mayor Steve Bach to sign a disaster declaration for the city. This declaration came before multiple additional storms hit Colorado over the next month.

These disasters have significantly changed our landscape; the county – which long ago inspired Katharine Lee Bates to write the famous words of "America the Beautiful" – is now home to charred, barren hillsides, and the vegetation that once protected the area from stormwater runoff has disappeared, paving the way for dangerous flash floods. As we work to recover from these devastating disasters, our county is fully committed not just to recovery, but also to mitigation efforts – both pre- and post-disaster – including improvements to our infrastructure through public safety projects. Through these efforts, in which we have invested more than \$50 million to date, we hope to help our residents and businesses bounce back from the impact of the disasters we have faced and become more resilient in the face of the disasters that, unfortunately, will inevitably strike El Paso County in the future.

Controlling Federal Disaster Costs: the Local Perspective

Counties are not merely stakeholders in this conversation, but a part of the federal-state-local partnership of governments that together share the responsibility of protecting our nation and its residents from disasters. Like the federal government, counties are entrusted by taxpayers with providing a variety of important services to their residents, and we understand and appreciate that rising expenditures in any single category will necessarily detract from other needed services. As such, NACo shares the Subcommittee's concern with the rising cost of disasters, and we stand ready to work with our federal partners to assess policy changes that could help to decrease these costs, to the benefit of federal, state and local governments and the residents and communities that we collectively serve.

Mr. Chairman, I will focus my remarks today on three principles that we believe the Subcommittee should observe as you consider policy changes aimed at decreasing federal spending on disasters:

- **Federal spending on disasters should be viewed in the context of corresponding spending by state and local governments, and the capacity of each level of government to fund disaster recovery efforts.** An accurate and comprehensive assessment of disaster expenditures from federal, state and local governments – which together share the responsibility of protecting our nation's residents from disasters and helping those residents recover when disasters strike – is necessary in determining whether federal spending should be decreased.
- **Federal disaster expenditures should decrease only as a result of disasters becoming less costly overall, rather than through cost shifts to state and local governments, as such cost-shifts would place additional strains on those governments' budgets, in turn compromising their ability to respond to disasters.** Proposals and recommendations put forth by federal entities in recent years carry the risk of this sort of cost shift, which may achieve the goal of decreasing federal spending, but would do so at the expense of state and local governments and the residents they serve.
- **Local disaster mitigation efforts – both those that take place before disasters strike and those undertaken following a disaster – have proven effective at decreasing the overall cost of disasters, and should be supported and incentivized by the federal government.** Counties are uniquely positioned to implement mitigation efforts through their regulatory authorities and convening powers, and collaboration with the federal government helps counties better utilize their own resources and authorities to mitigate the damage caused by disasters and decrease the impact and costs of future disasters for all levels of government.

By observing these principles – which are elaborated upon below – as you assess policy changes that could decrease federal disaster spending, the Subcommittee can lessen the likelihood of achieving savings in federal spending at the expense of state and local governments, and instead promote policies that foster crucial federal-state-local collaborations that decrease the cost of disasters for all levels of government and make America's communities more resilient when disasters strike.

Federal spending on disasters should be viewed in the context of corresponding spending by state and local governments, and the capacity of each level of government to fund disaster recovery efforts.

Numerous studies have demonstrated that major disasters and their associated costs have increased significantly – perhaps as much as five-fold – over the last several decades. These increases have been attributed to various causes, including changes in weather patterns and population growth, especially in

areas that are prone to disasters. It saddens me to say that few areas in the country have experienced this increased prevalence of disasters more acutely than El Paso County. Overall, according to analysis of FEMA data by NACo's Research Department, 92 percent of counties across the nation had at least one FEMA declared disaster between January 2006 and May 6, 2016. In short, we are well aware of the rising cost and toll of disasters.

We are also well aware that the federal government's expenditures related to major disasters have increased significantly during the last half-century, both in terms of the amount of spending and as a percentage of our nation's gross domestic product. While NACo appreciates the Subcommittee's concern with this increased spending, we urge you to consider federal disaster spending in the context of corresponding expenditures by state and local governments, and the capacity of each level of government to fund recovery efforts. It is our collective responsibility to protect our nation and its residents from disasters, and we must assess each level of government's contributions to this cause in the context of overall spending by all levels of government.

While comprehensive data on levels and trends of disaster spending by state and local governments is scarce, there is evidence that the vast majority of disasters that strike our nation are handled by these governments without aid from federal partners. According to [materials](#) published by the Federal Emergency Management Agency (FEMA), "although the exact number of disasters successfully handled without requests for federal assistance is not known, it is estimated at 3,500 to 3,700 annually."¹ Meanwhile, only about 35 disasters per year received major declarations triggering federal assistance between 1953 and 2014 – although the rate of declarations has increased in each decade during that period, and of course, disasters that receive major declarations are the costliest.² Nonetheless, it seems clear that state and local governments spend significantly on disasters, to say the least, and federal disaster spending should not be assessed without consideration of this fact.

It is also important to consider the economic impact of disasters on local governments, beyond just their disaster expenditures. County economies thrive when small businesses in their communities are thriving and creating tax revenue. When disasters strike, small businesses are impacted, and in turn, county economies suffer. According to a 2010 [study](#) by the National Federation of Independent Businesses, nearly a third of small businesses fail to recover following a presidentially-declared disaster or emergency.³ In this way, counties and their local communities continue to suffer the impact of disasters long after the event has ended, and in ways that are more difficult to quantify than the amount of their expenditures.

Furthermore, it is important to consider the respective fiscal capacity of federal, state and local governments when assessing contributions to our nation's recovery from disasters. Counties nationwide continue to be challenged by fiscal constraints and strained budgets, and according to a [report](#) released by NACo earlier this year, only 214 of the nation's 3,069 county economies have fully recovered to their pre-recession levels.⁴ Moreover, county governments in more than 40 states operate under restrictive revenue constraints imposed by state policies, including caps on property taxation that limit counties' ability to raise additional funds in the face of rising disaster costs.

¹ <https://training.fema.gov/emiweb/downloads/is7complete.pdf>

² Stafford Act Declarations 1953-2014: Trends, Analyses, and Implications for Congress
<https://www.fas.org/sgp/crs/homesecc/R42702.pdf>

³ <https://www.dhs.gov/news/2011/09/29/written-testimony-associate-fema-senate-committee-small-business-and>

⁴ <http://www.naco.org/resources/county-economies-opportunities-challenges>

An accurate and comprehensive assessment of the disaster spending and fiscal capacities of state and local governments – which share with the federal government the responsibility of protecting our nation’s residents from disasters and helping those residents recover when disasters strike – is necessary in determining whether federal spending should be decreased.

Federal disaster expenditures should decrease only as a result of disasters becoming less costly overall, rather than through cost shifts to state and local governments, as cost-shifting would place additional strains on those governments’ budgets, in turn compromising their ability to respond to disasters.

Decreases in federal disaster spending should not come at the expense of state and local governments. Proposals and recommendations to decrease federal disaster spending put forth by federal entities in recent years run the risk of achieving that goal by shifting costs to state and local governments, which, as previously mentioned, are generally less capable of bearing these costs. The ultimate result of shifting federal disaster costs to state and local governments would be to make our nation more vulnerable to an increasing number of disasters.

In an oft-cited 2012 [report](#), the Government Accountability Office (GAO) stated that raising the per-capita indicator used by FEMA to assess major disaster declaration requests could significantly decrease the number of disasters that qualify for such declarations.⁵ According to GAO, if the per-capita indicator were increased based on inflation beginning in 1986, the number of disasters that qualified for major declarations would have decreased by 25 percent; similarly, if the indicator was increased based on increases in per capital personal income, the number of major declarations would have decreased by 44 percent.

While these adjustments to the per capita indicator might decrease federal spending on disasters by lessening the number of events that qualify for federal funding, it is worth considering how these savings would be achieved. According to the Congressional Research Service, 25 percent of disasters account for more than 90 percent of FEMA’s disaster spending, and in turn, the remaining 75 percent of less costly disasters that receive federal aid account for less than one-tenth of FEMA’s disaster spending. Based on this, adjustments to the per capita indicator that would decrease the number of federal disaster declarations by 25 or 44 percent would result in relatively minor savings – significantly less than 10 percent – on federal disaster spending.

More importantly, whatever savings were achieved by the federal government in this manner would result from the elimination of federal aid for a large number of relatively less costly disasters. This is especially problematic because these disasters are often less costly because they have struck rural areas with less public infrastructure and relatively inexpensive homes. Moreover, these rural communities typically have less resources to expend towards disaster recovery efforts. As such, decreasing federal disaster spending by raising the per capita indicator used to assess disaster declaration requests would result in a deeply undesirable outcome: achieving relatively minor federal savings by eliminating federal aid for a large number of less costly disasters that are likely to impact rural communities with lesser resources, without decreasing federal spending on the few large disasters that account for the vast majority of federal disaster spending.

⁵ <http://www.gao.gov/assets/650/648162.pdf>

A more recent proposal, put forth by FEMA through an Advanced Notice of Proposed Rule Making (ANPRM) earlier this year, would introduce a “disaster deductible” that would have to be fulfilled by state – and perhaps local – governments before they received federal aid in the form of Public Assistance funds authorized by the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (42 U.S.C. 5121-5207). In conversations with NACo staff, FEMA stated that it put forth this proposal in part to avoid the undesirable outcome of raising the per capita indicator as suggested by the GAO report mentioned above. We sincerely appreciate FEMA’s consideration in this regard, and commend the agency not only for putting forth a proposal aimed at avoiding an outcome that would be especially harmful to rural communities, but also for its thorough and thoughtful engagement with NACo after the proposal was published.

NACo recognizes the potential strengths and benefits of the concept. Namely, the fact that state and local governments could meet the deductible both through their own spending on recovery *and* through qualifying disaster mitigation activities could have the important effect of incentivizing mitigation measures that would make communities more resilient to disasters, thereby saving lives and – importantly for the purposes of this conversation – decreasing the overall cost of disasters, resulting in savings not just for the federal government, but also for state and local governments. As elaborated upon in the following section, local mitigation efforts are key to driving down the cost of disasters, and FEMA’s “disaster deductible” concept aims to incentivize these practices.

That said, NACo has significant concerns regarding the “disaster deductible” as put forth in FEMA’s ANPRM, in part because the proposal presents a variety of issues for local governments that would likely result in the withholding of federal aid from communities as they attempt to recover from disasters. For example, El Paso County has spent over \$50 million dollars on disaster mitigation projects in the last several years as we have worked to recover from devastating wildfires and floods and prepare for future disasters. But despite these tremendous investments in disaster mitigation, under FEMA’s “disaster deductible” proposal, federal aid could be withheld from our county because, for example, the state of Colorado has not made sufficient investments in mitigation. Similarly, it is unclear how varying levels of mitigation investments among local governments within a state would be treated under the proposal – in both cases, El Paso County could be punished for the inaction of other entities over which it has no control. There are also a host of unanswered questions related to how FEMA would credit various mitigation activities and what sort of additional administrative burdens would be placed on local governments to document their mitigation efforts.

To its credit, FEMA has clearly considered these pivotal questions, but at this juncture has not provided the needed answers, and thus has not given state and local governments confidence that a “disaster deductible” proposal could be implemented without the significant risk that it would simply shift disaster costs from federal governments to state and local governments, including those who have already undertaken significant mitigation efforts.

Local disaster mitigation efforts – both those that take place before disasters strike and those undertaken following a disaster – have proven effective at decreasing the overall cost of disasters, and should be supported and incentivized by the federal government.

According to a [report](#) prepared by the Multihazard Mitigation Council for FEMA and affirmed by the Congressional Budget Office, each dollar spent on disaster mitigation results in \$4 in future savings.

⁶Investments in mitigation are the key to decreasing the overall cost of disasters, not just for the federal government, but also for state and local governments. Counties are uniquely positioned to carry out these mitigation efforts through their land use planning and regulation authority, ownership and operation of public infrastructure and stewardship of public finances. Each year, counties invest \$25.6 billion in economic development and \$106.3 billion in building infrastructure and maintaining and operating public works.

As counties have carried out local disaster mitigation efforts, collaborations with the federal government have proven effective at reducing the cost of disasters and increasing the resiliency of local communities. Following the Midwest floods of 1993, which inundated nine states with flood water and left \$12 billion of damage, Iowa's Black Hawk County partnered with FEMA to buy out structures located in floodplains and re-purposed the land as open space that residents could use for gardening, hunting and fishing. In the buyout, ninety-six homes were purchased and demolished and eighty-nine families moved safely away from the floodplain. The total cost of the program was \$4.3 million. Since the beginning of the project in 1993, the area has experienced several more flood events, and the estimated avoided damages from these events totals \$5.34 million. The state of Iowa projects the 30-year benefits from the project to be over \$6.6 million in avoided damages. The mitigation buyouts undertaken by Black Hawk County in collaboration with FEMA were successful in driving down the overall cost of future disasters and increasing the safety and resilience of the local community and its residents.

More recently, in 2010, Coconino County, Ariz. experienced the Schultz wildfire, which cost \$120 million to fight and significantly changed the physical landscape of the county. Prior to the fire, the county's landscape was easily able to handle significant rain events, but as a result of the charring of vegetation, heavy rains that came down after the wildfire caused flooding of residential areas. Since the fire and subsequent flooding, Coconino County has instituted storm water drainage standards for all new subdivisions, requiring that drainage systems be able to handle a five-year, 24-hour storm event (a "five-year storm" signifies a 20 percent chance of occurrence per year). The county also invested over \$18 million of county funds to mitigate flood impact and drew upon assistance from FEMA's Hazard Mitigation Grant Program (HMGP) for large mitigation projects, including land treatment (planting vegetative cover) and building protective structures like berms. We hope that Coconino County does not face disasters like the Schultz wildfire and subsequent flooding in the future, but if it does, the county will be more resilient thanks to mitigation efforts undertaken in recent years, and the overall cost of a future disaster will likely be less for the county, the state, and the federal government.

These examples demonstrate the value and effectiveness of federal programs like HMPG to local communities as they work to recover from disasters and enable their residents to quickly resume their normal lives. From providing the tools and resources needed for Black Hawk County to buy out repetitive loss properties and enabling Coconino County to create water drainage conveyances, these programs help counties better utilize their own resources and authorities to build safer communities after a disaster and decrease the impact and costs of future disasters.

In addition to their pivotal role in carrying out the local disaster mitigation measures outlined above, counties are also uniquely positioned to serve as conveners and help foster pre-disaster coordination between government officials and between local leaders and the communities they serve. This coordination helps to ensure that resources from all levels of government are deployed quickly and

⁶ http://www.preventionweb.net/files/1087_Part1final.pdf

efficiently during disasters, and that residents respond to disasters in a manner that reduces the risk of injury or death and costly reliance on emergency services.

When a disaster strikes, the strength of the federal-state-local partnership is tested and it is incumbent upon us as elected officials to strengthen and encourage strong intergovernmental relationships before these disasters strike. The quality and effectiveness of response to disasters depends in part on the ability of local officials – including local emergency managers appointed by elected officials in most counties to coordinate their disaster activities – to quickly establish communication with their proper counterparts at the state and federal level. Something as simple as ensuring that local officials know who to call when a disaster strikes can help to mitigate damage caused by a disaster, decreasing the overall cost of the event.

Communication between local officials is also crucial in mitigating damage and costs following a disaster. In San Diego County, Calif., the Advanced Recovery Initiative (ARI) was developed to improve the efficiency of the county’s work during disaster recovery by pre-designating and training county staff members as Disaster Service Workers (DSW) in specific positions. This planning helps staff learn their role before their deployment and understand expectations in a disaster. The ARI created a database of these pre-trained employees with a pre-designated recovery role. The database tracks the daily status of each employee and any job classification change. This tracking ensures that ARI membership is accurate, up to date and members are available in the event of a disaster.

Just as important in reducing the damage caused by disasters is effective communication between local leaders and the residents they serve. In El Paso County, we expend significant resources to educate our community on effective preparation for future wildfires. Last Saturday, I participated in a wildfire preparation event hosted at a local church, along with a local fire marshal and an official from the Colorado Forest Service. At the event, which was free to all area residents, we shared information on creating “defensible spaces” around homes, about the proper materials to use for decks and patios and about family evacuation planning. We also list a number of resources on our county website that help our residents prepare for disasters, including a guide to preparing for wildfires and an El Paso County-specific guide to preparing for flash floods.⁷

Through these efforts, we not only make our communities more resilient to disasters, but also foster a sense of investment in the community’s recovery when disasters strike. In the Waldo Canyon Fire that ravaged our county in 2012, 6,000 people pitched in to perform over 41,000 hours of volunteer work. I believe that this type of collaborative recovery is only possible because of the strong social fabric that ties counties to their residents, and we foster these ties by working with our residents to prepare for disasters.

While local leaders are best positioned to help carry out pre-disaster coordination between government officials and between local leaders and the residents we serve, the support of the federal government is important in establishing these practices in communities across the nation. This is one of the most cost effective and efficient ways to ensure that those involved in a disaster respond in ways that help save lives and decrease overall costs.

⁷ <http://adm.elpasoco.com/emprep/Pages/default.aspx>

Closing

Thank you again Chairman Barletta, Ranking Member Carson and members of the Subcommittee for this opportunity to provide the local perspective in this important conversation on federal disaster spending. The nation's counties are grateful to this Subcommittee for its ongoing strong support for emergency management at the local, state and federal levels, and we look forward to continuing to work with you towards the shared goal of making our nation and its local communities more resilient in the face of disasters.

Bryan Koon

**Director, Florida Division of Emergency Management
President, National Emergency Management Association**

STATEMENT FOR THE RECORD

**On behalf of the
National Emergency Management Association**

**Submitted to the House Transportation and Infrastructure Subcommittee on Economic
Development, Public Buildings and Emergency Management**

United States House of Representatives

Controlling the Rising Cost of Federal Responses to Disaster

May 12, 2016

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Introduction

Thank you, Mr. Chairman, Ranking Member, and distinguished members of the Committee. As stated, my name is Bryan Koon, and I am the Director of the Florida Division of Emergency Management. I am here on behalf of the National Emergency Management Association (NEMA), which represents the state emergency management directors of the 50 states, territories, and District of Columbia. NEMA's members, many of whom serve as Homeland Security Advisors, are prepared to deal with an ever changing and increasingly complex set of challenges that test traditional approaches to natural and manmade disasters. I appreciate the chance to come before you today to discuss the rising costs of disasters and NEMA's recommendations to make meaningful progress to limit the impact of future events.

Core Principles for a Disaster Resilient Nation

We are witnessing a more diverse array of threats than at any time in history. The skill, speed, and adaptability of the threats are challenging our defense in ways we have not seen before. The high incidence of natural disasters and terrorist threats in the United States challenges the peace, security, and general welfare of the nation and its citizens. This nation deserves safety and security, but it also deserves solvency through disaster cost reduction and an increased focus on resilience.

- The unpredictability of budgets at every level of government and the uncertainty surrounding the types and severity of disaster damage communities are likely to see in the near future puts risk reduction at a premium. NEMA believes the following:
 - Reducing the overall costs of disasters, at all levels of government, is necessary for the continued economic and social equilibrium of the nation. Simply shifting costs from the federal level to state, local and tribal governments does not achieve meaningful disaster cost reduction.
 - The government practice of spending more money on disaster recovery than risk reduction prior to the disaster must be changed. Hazard mitigation is a demonstrably cost-effective effort with a documented return on investment.
 - Mitigation and resilience activities by state, local and tribal governments should be recognized and incentivized by the federal government. In the long-term, cost savings will be realized at all levels.
 - Federal and state governments recognize that much of the legal authority and responsibility for risk reduction decisions and activities resides at the local level i.e. adoption and enforcement of building codes, zoning and land use decisions. Local and tribal governments are critical partners in creating and sustaining disaster resilient communities.
 - National efforts to reduce the costs of disasters through legislation or rulemaking must:
 - Recognize that state, local and tribal governments already handle the vast majority of disasters and emergencies on their own and without federal assistance;
 - Refrain from cost-shifting;

- Utilize the best available science and predictive analysis tools to illustrate data-driven return on investment calculations;
- Encourage and reward mitigation and resilience activities in the broadest sense;
- Provide for transparency and accountability without increased complexity and administrative burden.

Cost Reduction Through Mitigation Activity

The best way to reduce the cost of disasters is to design and harden the built environment to match the threat environment. One component of such effort is mitigation, which averages a 4 to 1 return on investment (ROI) in addition to less tangible environmental benefits. Federal spending, however, does not reflect this priority. From 2004-2013, FEMA spent \$71.2 billion in Public Assistance and Individual Assistance to help communities recover from disasters, in addition to tens of billions of dollars spent by the Departments of Housing and Urban Development and Labor, the Federal Highway Administration, the Federal Transit Authority, the Small Business Administration, and the Army Corps of Engineers. In that same time period, only \$5.2 billion was spent on Hazard Mitigation Grants to reduce the impact of future events.

Response and recovery programs are critical post-disaster investments, but speak to a cyclical focus that prioritizes managing the impacts of disasters instead of reducing or eliminating those impacts altogether. Incorporating mitigation into disaster recovery through Public Assistance or Hazard Mitigation Grant Program funding is necessary, but in the chaotic and often fragmented post-disaster environment, investments may not always address the long term, strategic needs of the community. Mitigation should be encouraged before the disaster occurs to strengthen and protect our critical infrastructure, provide incentives for communities for the adoption and enforcement of effective building codes, and reward builders and homeowners who make responsible decisions to mitigate risk that can have positive impacts on the entire community.

Mitigation activities do not have to be accomplished solely with federal funding. The goal is to reduce vulnerabilities and increase resilience for the future using all available resources and these efforts can be more sustainable when coupled with investments from state, local, and tribal government as well as private sector and individual stakeholders. Collaborative mitigation strategies encourage relationship building and facilitate innovative funding mechanisms that can support the type of long-term, community-driven investments that risk reduction efforts require.

Hazard mitigation is a demonstrably cost-effective effort with a documented return on investment. Providing incentives and empowering communities, business owners, and government officials at all levels to mitigate is a compelling narrative that shifts the focus from federal to community priorities that reflect evolving risk on the ground.

Ongoing Efforts to Achieve Resiliency

The vast majority of building projects in the nation are funded by entities other than the federal government. And every year, those roads, bridges, water treatment plants, shopping malls, housing developments, and stadiums get built better and stronger than the year before. Advances in building engineering, materials and techniques; better hazard awareness and modeling; more robust building codes, zoning, and land use principles; and an increased focus on occupant safety have all contributed to creating a more resilient built environment. The federal government

should continue to assist in this progress by recognizing the cost-savings that will be recognized as a result of these improvements and finding ways to help replicate emerging practices across the country. It should also recognize and eliminate those situations that create dis-incentives for improvement.

Two programs which could significantly reduce the cost of disasters but are underutilized are the Community Rating System of the National Flood Insurance Program, and the opportunity for states to earn 33% more post-disaster mitigation funding by having an enhanced mitigation plan approved by FEMA. Full participation in these programs by states would significantly improve their readiness by helping to put into practice well-researched and considered mitigation techniques. However, staffing and funding levels and state and local levels make participation in these programs difficult, and the reward is often too far removed from the risk to motivate those who choose to enact the program. These programs and others like them should be evaluated to determine how to improve the participation rates of eligible jurisdictions in order to maximize their impacts.

In addition to improving currently existing federal programs, FEMA and others should recognize outstanding efforts done by state and local entities and encourage their adoption nationwide. Following Hurricane Floyd in 1999, North Carolina established and has funded a statewide Floodplain Mapping Program. This program, recognized by FEMA as a Cooperating Technical Partner, has to date:

- Acquired two rounds of statewide LiDAR derived topographic data;
- Studied over 31,000 stream and coastal miles with Base Flood Elevations established or updated for all studied streams;
- Facilitated the adoption of the maps by all 100 counties in North Carolina and the Eastern Band of the Cherokee Indian Nation;
- Transitioned completely away from costly cartographic mapping to an efficient, dynamic database derived display for all data and maps;
- Assessed flood damage impacts for all structures in North Carolina for five flood events;
- Established ability to calculate and provide flood insurance premium rates for all structures in North Carolina;
- Established a real-time flood warning system that calculates real-time data to structures; and,
- Established Flood Risk Information System (FRIS) that houses and dynamically displays all flood data, models, maps and risk associated with flood. This system also houses and displays data for Virginia, Alabama and Florida which is highly efficient and a cost savings for each state.

Current Efforts to Reduce Disaster Costs to the Federal Government

FEMA has undertaken various efforts over the last decade to reduce costs and streamline operations. In the aftermath of Superstorm Sandy, which started a politically charged conversation about federal disaster costs, cost reduction has been a priority.

PA Re-Engineering – The Public Assistance Reengineering is an excellent example of FEMA working to improve and maximize existing programs. The primary change is intended to alter the process to be more customer centric. When customer service is the focus the local

jurisdictions should see more timely results with restoration of infrastructure and cost reimbursement. Through this re-engineering FEMA is working to address the need for reduction in administrative costs. The thought process is that these changes will require less time in the field, thereby reducing overhead costs for joint field offices. While it is still too early to determine the effectiveness of the change, we are pleased with the effort and urge that similar reforms be considered by other programs that impact our ability to mitigate, prepare, and recover.

Emergency Management Assistance Compact (EMAC) – Investment into EMAC leverages federal grant dollars that have already been invested in state and local emergency management capabilities. EMAC has made it easier for states to assist each other effectively—with the added benefit of lessening the need for federal resources in the process. Going forward, we must encourage greater investments as states work with one another to reduce the need for federal assistance, reduce federal administrative costs, reduce property damages, and most importantly, save lives.

National Strategy for Reducing Disaster Costs – In the Sandy Recovery Improvement Act (SRIA), Congress required that FEMA develop a National Strategy for Reducing Disaster Costs. NEMA quickly realized the effort to develop a framework for a National Strategy for Reducing Future Disaster Costs could be paramount in ensuring the solvency of our disaster response network for generations to come.

NEMA members understood the importance of clearly articulating initial steps in developing an informed and effective national strategy for reducing future disaster costs including planning assumptions. NEMA also recognizes varying levels and types of activities to consider for reducing future disaster costs including those in the near-term, long-term, administrative, programmatic, operational, and strategic. While the initial direction from Congress was for FEMA to simply describe a framework, NEMA encourages the full development of this strategy.

Disaster Deductible – In January 2016, FEMA released an Advanced Notice of Proposed Rulemaking (ANPRM) that introduced a concept that would create a State deductible for federally declared disasters. The ANPRM was light on details, and instead highlighted questions for stakeholders to allow for significant input on any future rulemaking. The overall goal is to reduce the cost of disasters by first, requiring a deductible to be paid before federal financial assistance would kick in and second, providing States a chance to buy down this deductible by investing in mitigation and risk reduction activities.

Comments to the ANPRM were accepted until late March and NEMA submitted comments to the Federal Register along with over 100 other stakeholders. There was no clear consensus of opinion on the proposal. Some States are open to the idea, others have significant concerns and still others, took no position, asking additional questions and raising further issues.

While there was a wide range of opinions among the states, certain themes were repeated:

- Any new concept must represent a real reduction in disaster costs – not merely shifting the financial burden to states, local jurisdictions, tribes, etc.

- If FEMA goes forward with the concept, there must be ample time for implementation, both for FEMA and the states. For FEMA, this means full development of the concept, internal education and training, and the creation of understandable guidance for the states. On the state level, it will require first and foremost enough time for state legislatures to be thoroughly briefed on the new requirements and plan through their budgetary cycles for additional deductible responsibilities. States will also need time for training of state personnel as well as all sub-grantees.
- If the idea proceeds, there must be detailed program guidance with clearly defined requirements from FEMA, including all data that states would be expected to capture in order to meet the deductible.
- The more subjective elements in the new concept, the more opportunities for confusion, contradiction, inconsistencies and varying interpretation from region to region. This has occurred many times in the existing program and everything possible should be done to avoid this with any new structure.
- The proposal should not result in ever-increasing and onerous administrative burdens, requiring more personnel, more expense and more bureaucracy.
- The deductible cannot result in delayed assistance to those in need.

Recommendations for the Future

NEMA will continue to work with Congress and the Administration to urge progress on critical proposals to tackle increasing disaster costs in a way that does not simply shift costs to State and local stakeholders. I'll touch briefly on a few of them.

- Continue to offer incentive programs that allow states to pursue additional opportunities to strengthen their communities. Although a number of these programs and incentives exist, they are not fully utilized. We recommend that FEMA and other agencies continually evaluate these programs to better understand what the issues are that deter or prevent communities from fully leveraging these programs. Examples of these types of programs are the additional funding available through having an enhanced mitigation plan, the savings communities enjoy through participation in the community rating system, and the cost-savings generated by accelerated debris removal, the use of volunteers in disaster response and recovery. All of these programs have a positive return on investment that will ultimately reduce the cost of disasters at every level. Communicating return on investment, however, is often hindered by limitations put in place by the Office of Management and Budget and the Congressional Budget Office.
- NEMA also recommends that a study to determine the true costs of disasters be conducted that captures not only those direct financial costs borne by FEMA, but also those costs, both direct and indirect that are paid by other federal agencies, state, local, and tribal governments, and the private sector. This should not only account for economic costs related to a disaster, but the opportunity cost for economic activities that were impacted by the disaster. Such a study will paint a much clearer picture of what the true cost of natural and man-made disasters are to the United States, and allow us to develop a more comprehensive and ultimately successful program to reduce those costs.

- Position FEMA as a partner in developing a more resilient nation. FEMA's ability to respond quickly to disasters has improved tremendously in the years since Hurricane Katrina. They should now position themselves there as an organization that is there all along, helping the community to get ready for that day, integrating the myriad of resources available to reduce the impact of the next flood, hurricane, or earthquake. As community leaders have better access to the true cost of disasters, they will be more likely to position their community for successful mitigation efforts. And as citizens and consumers become more aware of the options available to them that will help preserve their life and property they will choose them, spurring further development in this area. Mitigation and long-term recovery are societal investments – not a cost. These endeavors must build on non-traditional partnerships to communicate that efforts are worth the investments.
- Many of the functions that FEMA fulfills during a disaster could be done in a more cost-effective manner by using personnel deployed from tribal, state, or local government through the Emergency Management Assistance Compact. Doing so not only has the potential to reduce the cost of the disaster, but it allows those personnel to gain real-life experience that will benefit their local program in future disasters. The receiving entity will also enjoy the benefit of having someone with experience at their level of government assisting them. And because these relationships are contracted for and paid by the receiving entity, there is an element of speed and efficiency that can be lost when the service is provided at no charge by the federal government.
- Communities across the nation are facing the impacts of increasingly severe weather and the trend is expected to continue. A changing climate, regardless of the reasons for the change, increases the loss of life and property. Widespread droughts, rapidly moving wildfires, severe and sustained coastal or riverine flooding, more powerful hurricanes, and record-breaking snowfall may become even more common. These disasters may exceed the current planning factors used to ensure that the appropriate response and recovery assets are in place. All stakeholders interested in reducing the cost of disasters must be ready to adapt to evolving cost-drivers like extreme weather.

We must consider the growing scale of these situations and facilitate partnerships with NOAA and the National Weather Service, research center and academic institutions, the private sector, the insurance industry, and emergency management to continually reevaluate the potential impact to the nation, and our readiness for them, and to put in place the recommended solutions to ensure that we are not caught unaware. Smart decision-making and investments that support disaster resilience are the keys to preventing the costly toll of future disasters.

- Partnerships should be supported and encouraged to engage stakeholders in working groups that harness the power of collaboration. For example, the National Information Sharing Consortium works with DHS First Responder's Group to provide tools to help communities improve preparedness through greater information sharing, situational awareness, improved resource planning, improving alerts and warnings, and mutual aid.

The work that groups like this do on a grassroots level to review and assess developed processes can be leveraged throughout the federal government, and may reduce the burden on the Federal Government as they move forward with the implementation of standards. If organizations have worked together to create, test, train, and implement agreeable standards across multiple jurisdictions, they have done the heavy lifting which could potentially save millions.

Conclusion

While many stakeholders approach the issue of increasing disaster costs differently, I feel comfortable saying we all have a common goal. As government officials, private sector business leaders, and community members, we all have a role to play in reducing the cost and impact of disasters.

Mitigation activities can take many forms, and their uses differ by region. What does not differ, however, is the value these initiatives can hold. In today's economic times, investments must be made in the prevention of high disaster recovery costs incurred by the federal government, states or localities. FEMA's mitigation programs, including the Post-Disaster Mitigation and Hazard Mitigation Grant Programs as well as programs within the NFIP have been effective in reducing the possibility of property damage, personal and commercial hardship, as well as long lasting monetary burdens.

We have a long way to go, however, to move the needle in a meaningful way that allows us to see significant decreases in the liability to the DRF and state budgets. Government programs, while impactful and critical drivers of investment, are not the only tools we have at our disposal.

I appreciate the opportunity to testify before you today and stand ready to answer any questions the Committee may have.

TESTIMONY OF ERIC NELSON

**SENIOR VICE PRESIDENT OF CATASTROPHE RISK MANAGEMENT
AT TRAVELERS INSURANCE AND EXECUTIVE COMMITTEE
MEMBER OF THE BUILDSTRONG COALITION**

BEFORE

**THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC
BUILDINGS, AND EMERGENCY MANAGEMENT**

UNITED STATES HOUSE OF REPRESENTATIVES

ON

**CONTROLLING THE RISING COST OF FEDERAL RESPONSES TO
DISASTERS**

THURSDAY, MAY 12, 2016, 10:00 A.M.

2167 RAYBURN HOUSE OFFICE BUILDING

Chairman Barletta, Ranking Member Carson, and members of the Subcommittee, thank you for holding this important hearing today to examine solutions to controlling the increasing costs of natural disasters to the federal government and the U.S. taxpayers. My name is Eric Nelson and I am the Senior Vice President of Catastrophe Risk Management at Travelers Insurance. I am testifying today on behalf of the BuildStrong Coalition, a group of business and consumer organizations dedicated to reducing human and economic losses from natural disasters by developing a national mitigation investment strategy geared towards pre-disaster loss prevention and incentives for resilient construction. The coalition consists of a diverse group of members representing first responders, emergency management officials, architects, engineers and businesses large and small. Travelers membership in the BuildStrong Coalition began in 2012 as part of our efforts to raise awareness about how disaster preparedness can help minimize risk and reduce losses to communities, businesses and families. As one of the largest property/casualty companies in the U.S., Travelers provides unique experience and expertise from the private sector that can add value to the federal government's mission to manage its own risk and losses from natural disasters.

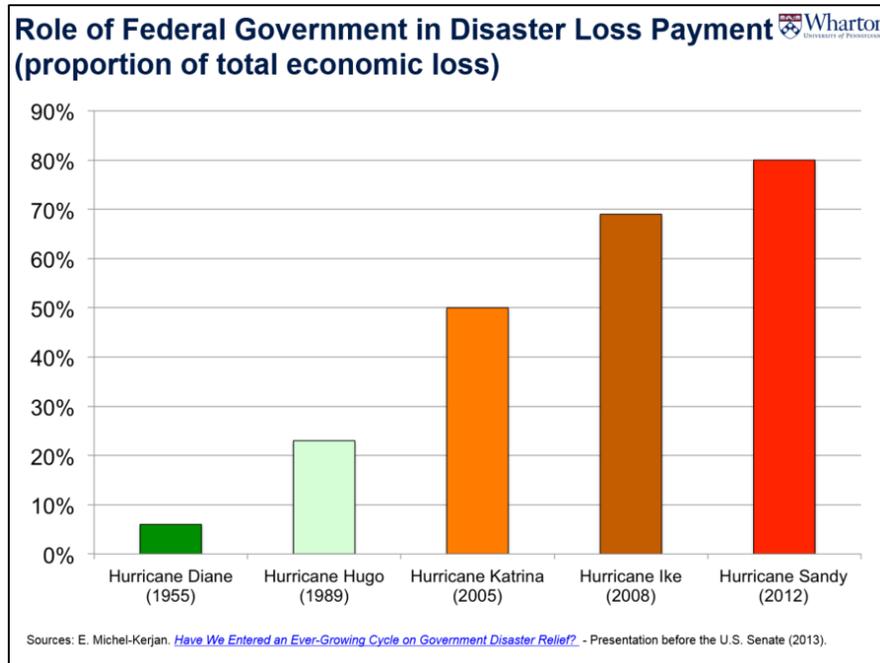
The BuildStrong Coalition continues to be proud to partner with the Committee in its work to investigate causes of and solutions to the rising cost of disasters in the U.S. I would first like to thank Chairman Barletta and members of the subcommittee for their continued leadership in conducting a series of roundtables on this topic beginning in January of last year. The roundtables helped identify opportunities that a federal mitigation investment strategy can help address in the face of our country's increasing number of severe and costly weather events.

I begin today by outlining three of the major takeaways emerging from the roundtables. Doing so will enable us to “set the table” by describing what we have learned before moving on and attempting to answer the most important question of all:

- Given that the vast majority of Americans are exposed to some type of natural disaster, spanning Tornadoes, Hail, Wildfires, Flooding, Earthquakes and Hurricanes, what actionable steps can Congress take to mitigate risk, lessen the impact to families and communities across America and reduce the federal government’s role in economic losses from natural disasters?

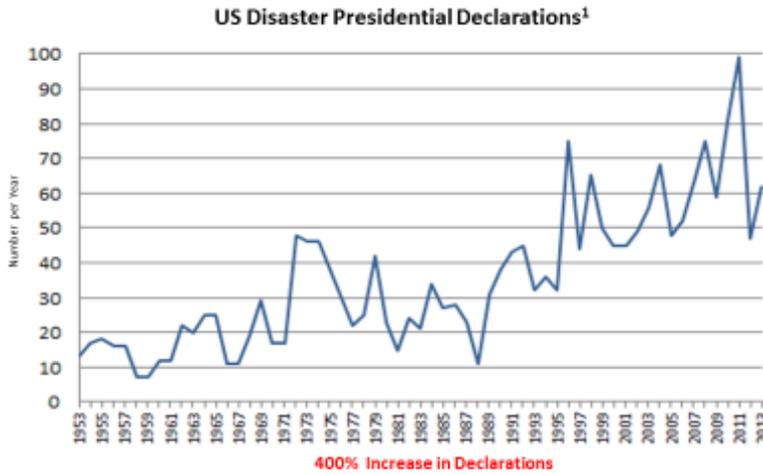
The first takeaway from the roundtables is that by almost every measure, federal disaster spending is increasing and is on an unsustainable path. Two charts from the first roundtable most effectively communicate this point. The first chart was presented by Dr. Erwann Michel-Kerjan from the Risk Management and Decision Processes Center at the Wharton School of the University of Pennsylvania, and shows the exploding federal cost share for natural disasters over the last 60 years, increasing from roughly 6% in 1955 to 77% in 2015. To help put those percentages into context, Dr. Michel-Kerjan noted that the average cost share for national governments in Europe is between 40-50%.

FIGURE



The next chart illustrates the growing number of U.S. presidential disaster declarations since 1953, which have increased by almost 400% over the last 60 years. The numbers in these two charts, taken in concert, underscore that federal disaster declarations are at an all-time high and will continue to climb if measurable steps are not taken to address the underlying causes.

FIGURE 2



¹ Federal Emergency Management Agency

The second takeaway from the roundtables is that states, communities and individuals have very little incentive to undertake loss prevention measures before a disaster occurs. The Multihazard Mitigation Council conducted a study which documented how every \$1 spent on mitigation saves society an average of \$4. These findings represent compelling evidence that the federal government is inadvertently fostering short sighted behavior throughout state and local governments and with individual homeowners.

The third point of consensus from the roundtable discussion is that eliminating disincentives and replacing them with appropriate incentives can foster widespread and comprehensive investments in proven, effective and efficient mitigation. Doing so can lead to widespread benefits for everyone involved.

The federal government stands to benefit by lowering the federal costs share of disaster recovery. States stand to benefit by both alleviating the budget strain caused by major disasters and easing their dependency on federal disaster aid.

Families stand to benefit by protecting their property and loved ones, while also reducing personal disaster costs and, most importantly, mitigating losses. Everyone would take comfort in knowing that assistance would be there if they lose everything to a natural disaster, but I believe anyone would prefer not to have lost everything in the first place. Communities and local economies stand to benefit by enabling citizens and businesses to recover more quickly after a natural disaster. While the benefits are clear, the key question mentioned earlier remains: What specific policies can Congress put in place to accomplish this?

In October 2015, the BuildStrong Coalition issued a report exposing the lack of a comprehensive federal strategy for investing in mitigation. The report presented a compelling and detailed framework for remedying the deficiencies in the current system, while providing the framework for a long term plan to buy down disaster exposure in the United States. The national mitigation investment strategy is based upon the latest science and engineering research from world class research institutions such as the Insurance Institute for Business & Home Safety, (“IBHS”).

IBHS and other research institutions conduct research on building performance standards under simulated disaster conditions in controlled environments. Research from these institutions demonstrates that the statewide adoption and enforcement of model building codes can help eliminate long-term risks affecting people, property, the environment, and, ultimately, the economy. Studies conducted in the wake of major disasters support these findings as well; for example:

- According to IBHS, statistics show that of all businesses that close down for 24 hours or more due to a disaster, at least 25% never reopen. Small businesses are particularly at risk because they likely have all operations concentrated in one location.

- The Louisiana State University Hurricane Center estimated that stronger building codes would have reduced wind damage in the state from Hurricane Katrina by 80%, saving nearly \$8 billion. However, the federal government is currently doing so little to incentivize the adoption and enforcement of strong building codes. Only 3 states have adopted the latest (2015) residential building codes; in addition, only 21 states and the District of Columbia are now using the 2012 International Residential Code. This means that about half of our states lack key provisions that the latest residential building codes provide - provisions that are specifically designed to prevent injuries and deaths when disaster strikes.

Thanks to the leadership of Congressman Curbelo and Congressman Sires, I am pleased to report that the core principles from this report have been turned into legislation with the introduction of H.R. XX, the National Mitigation Investment Act. The National Mitigation Investment Act represents an important step toward developing a comprehensive solution to address rising costs of disasters. The legislation provides a powerful incentive for states to adopt and enforce strong statewide building codes and authorizes a first of its kind competitive grant program to improve the building code enforcement capabilities of states and localities. Furthermore, the legislation includes a provision the Chairman authored in HR1471 mandating the first comprehensive assessment of federal disaster spending and policy by Congress in over 20 years.

The National Mitigation Investment Act represents an innovative proposal to reform the way the federal government looks at mitigation and disaster spending. Congressional leaders, policy experts and the GAO all agree that strong building codes and enhanced pre-disaster mitigation spending would provide life and cost saving benefits to the United States. I urge you and your colleagues to support the National Mitigation Investment Act to reign in the exploding disaster costs to the federal government and American taxpayers.

Chairman Barletta, Ranking Member Carson and members of the Subcommittee, I applaud you for your leadership on this important issue, and thank you for allowing me to testify today. I would be happy to answer any questions.



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TESTIMONY OF

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FOR THE

NATIONAL INSTITUTE OF BUILDING SCIENCES
MULTHAZARD MITIGATION COUNCIL AND
COUNCIL ON FINANCE, INSURANCE AND REAL ESTATE

TO THE

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS AND
EMERGENCY MANAGEMENT

MAY 12, 2016

Chairman Barletta, Ranking Member Carson and Members of the Subcommittee, thank you for the opportunity to provide testimony on cost-effective opportunities to reduce the economic impacts of natural disasters through the establishment of new incentivization pathways and investments in mitigation strategies.

I am pleased to be before you in two capacities. I serve as Director of Professional Development and Geospatial Education at The Polis Center, Indiana University Purdue University Indianapolis (in Ranking Member Carson's district), and as the Chair of the Multihazard Mitigation Council of the National Institute of Building Sciences.

First, let me provide a little background on the Center and our work to advance resilience locally, regionally and nationally. Polis was formed in 1989 with the mission of linking academic and community expertise to create strong, resilient communities and to build their capacity to make effective, data-driven decisions. Our initial focus was the Indianapolis area. While we continue to have a strong commitment to Indiana, our work has grown to include national as well as international audiences. Polis partners span the public, private and not-for profit sectors. We are particularly skilled in the application of digital technologies such as Geographic Information Systems (GIS) and other geospatial tools to address issues facing the nation's communities.

The following are a few examples of the more than 700 projects that Polis has supported.

- We partner with The Indiana Department of Homeland Security (IDHS), regional commissions, and local community planners to develop multi-hazard mitigation plans in accordance with the federal Disaster Mitigation Act of 2000. Since 2003, we have led these efforts for nearly all of Indiana's 92 counties. This work includes qualitative and quantitative risk analyses, working with local communities to develop mitigation strategies, and developing the final plan.
- We have supported the State of Georgia's disaster planning since 2011. We work with the Georgia Emergency Management Agency, Department of Natural Resources, University of Georgia, Association of Regional Commissions, and other partners. We create tools and workflows that relate detailed local information about buildings and populations to the hazards that threaten them. We also provide extensive training to ensure in-state capacity to use these resources effectively. We facilitate collaborations among federal, regional, state and local organizations that have led to the development of data development and sharing strategies. We have also performed such work in Texas, Florida, South Carolina, West Virginia, and Puerto Rico.
- We have been involved with multiple aspects of FEMA's Risk MAP program which, as you know, is designed to improve flood-risk data and flood-risk awareness. In collaboration with the Indiana Department of Natural Resources (IDNR) we have led and partnered in multiple demonstration projects to test and refine Risk MAP concepts and products. We have also worked with FEMA and IDNR to help communities identify mitigation projects that could lead to increased resiliency from flooding impacts.
- Polis has been a leader in emergency management education since 2003. We have developed over two dozen courses for FEMA and offered classroom instruction, conference keynotes, and other presentations in over 100 cities in 36 states and multiple countries.
- We have developed the SAVI Community Information System (savi.org), the nation's largest, which provides more than 10,000 indicators about health, education, crime, and a host of other quality-of-life measures, as well as information on 19,000 community assets, for the 11-county Indianapolis MSA. SAVI is used widely in numerous community planning and improvement efforts, and we are currently exploring ways that we will be able to link its data to the issues that confront emergency management.
- Finally, we seek to broaden the meaning of disasters to include social conditions such as food insecurity, homelessness, and other problems that are made worse by natural disasters. We believe that local and national interests are best served when we can link the networks serving natural, social, and economic emergencies to provide a comprehensive response to conditions that disrupt and destabilize communities.

We will continue to work creatively with government, voluntary organizations, faith-based communities and others to advance the goal of enhancing the resiliency of the American people. In this effort, we are learning much about the ability of universities to work in partnership with local communities, linking academic and practical expertise to develop innovative and effective solutions to the problems brought by natural and social disasters.

I bring my strong interest in advancing resilience to my volunteer role at the National Institute of Building Sciences' Multihazard Mitigation Council, where it is my honor to serve as the 2016 MMC chair.

The U.S. Congress established the National Institute of Building Sciences in 1974 to serve as an authoritative source for both the public and private sectors to create a safe, healthy built environment across the United States (12 USC 1701j-2).

To achieve its mission to support promulgation of nationally recognized performance criteria, standards and other technical provisions for maintenance of life, safety, health and public welfare, the Institute has established a diverse portfolio of councils that engage building industry experts in examining and developing tools, technologies and practices to meet identified needs. The Institute and its Multihazard Mitigation Council (MMC) and Council on Finance, Insurance and Real Estate (CFIRE) have been particularly focused on opportunities to advance resilience and encourage the most cost-effective approaches to reducing the impacts of natural and man-made disasters.

Resilience¹ has come to occupy a place in public policy and programs across the United States (Kahan, p. 2). Yet, even in the face of growing losses and the deleterious effects of natural disasters, the nation's capacity and appetite is waning for continued funding of disaster recovery—particularly in the face of increased frequency and severity of disaster events. Despite the long-proven benefits of federal and state pre- and post-disaster mitigation² efforts to promote resilience, funding for these initiatives has remained small compared to the post-disaster recovery funding.

As the MMC identified over ten years ago, “money spent on reducing the risk of natural hazards is a sound investment. On average, a dollar spent by FEMA on hazard mitigation provides the nation about \$4 in future benefits.”³ While the Institute and the MMC believe this assessment is still accurate and compelling, we are in the process of conducting a follow-on study updating the benefits associated with FEMA investments in mitigation, adding the benefits of investments by

¹ As defined by the National Academies 2012 publication, *Disaster Resilience: A National Imperative* (p. 16), “resilience is the ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events.” This definition is considered by the National Academies to be consistent with the international disaster policy community (United Nations Office for Disaster Risk Reduction - UNISDR, 2011), and U.S. governmental agency definitions (Subcommittee on Disaster Reduction - SDR, 2005; Department of Homeland Security - DHS Risk Steering Committee, 2008; Presidential Policy Directive - PPD-8, 2011), and National Research Council (NRC, 2011). However, there is no one-size-fits-all definition of resilience; a variety of definitions has the benefit of providing users with flexibility in applying resilience in differing situations (Kahan, p. 6). The MMC and CFIRE recognize that definitions of resilience will vary from state to state and community to community according to local infrastructure, economies, demographics, governance and stakeholders. Incentivization is intended to work with and be tailored to any of these localized approaches to resilience. Whatever means communities devise for achieving resilience, the MMC and CFIRE will propose a way to incentivize it.

² In “*Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities, Volume 1 Findings, Conclusions, and Recommendations*” (p. 1), The National Institute of Building Sciences Multihazard Mitigation Council defines disaster mitigation as physical measures to avoid or reduce damage from disasters, such as elevating, acquiring, or relocating structures threatened by floods, and strengthening structures to resist earthquake and wind forces. Mitigation in the context of resilience allows structures and infrastructure, and, consequently, the economic and social processes associated with them, to be useful after a disaster.

³ Multihazard Mitigation Council. *Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities, Volume 1- Findings, Conclusions, and Recommendations*. National Institute of Building Sciences, 2005.

other federal agencies, and, for the first time, capturing the benefits achieved through investments in mitigation made by the private sector. Completion of the first phase of this effort is anticipated in the summer of 2017, pending receipt of funding.

Recognizing the significant benefits achieved through pro-active investments in mitigation; the multi-stakeholder engagement necessary to achieve community resilience; the limited funding available to support disaster mitigation, response and recovery; and the anticipated increase in disaster events, a new approach is necessary—one focused on capturing all of the potential incentives provided by both the public and private sectors for pre- and post-hazard investment. The most cost-effective manner to achieve resilience is through a holistic and integrated set of public, private and hybrid programs that capture opportunities available through investment in mortgages and equity real estate; insurance; finance; tax incentives and credits; grants; regulations; and enhanced building codes and their application. This focus on leveraging private/public-sector opportunities to induce corrective action is called “incentivization.”⁴

The current methods to incentivize investment in resilience rely on three primary mechanisms: federal grant programs (with some support from private foundations); insurance premium discounts for implementing measures to reduce vulnerability; and actions by local governments, either in the wake of a disaster or before an event occurs, through the foresight of community champions. While these approaches have provided a level of resilience, they have taken the nation only so far. Yet, as shown in Figure 1, the damage from extreme weather events has continued to increase in the past 35 years.⁵

Despite increased losses and the myriad benefits of investing in community resilience, federal assistance for resilience in terms of “pre-disaster mitigation” has actually declined over the past decade.⁶ More must be done before natural disasters hit to prevent sadly recurring aftermaths: the loss of life and injury to loved ones; families and children made homeless; irreplaceable possessions lost; curtailed ability of breadwinners to make income; businesses, built with hard work over the years, destroyed; and wrecked regional economies.

The incentivization approach calls for input, consensus, leadership and action from a broad spectrum of stakeholders representing the financial, regulatory and economic processes that need to be developed and coordinated to make incentivization part of the nation’s economic fabric. Such discussions need to occur at sufficiently high levels in the public and private sectors to ensure enactment. Participants should include those who offer incentives, such as insurance and finance-related companies, lenders and foundations, as well as forward-thinking communities

⁴ Multihazard Mitigation Council and Council on Finance, Insurance and Real Estate. *Developing Pre-Disaster Resilience Based on Public and Private Incentivization*. National Institute of Building Sciences, 2015.

⁵ Figure 1 is constructed from the reference: “NOAA National Climatic Data Center, Billion-Dollar Weather and Climate Disaster: Table of Events, National Oceanic and Atmospheric Administration,” <http://www.ncdc.noaa.gov/billions/time-series>. Costs are CPI adjusted. According to NOAA, cost estimates are rounded to the nearest billion dollars. Ongoing research is seeking to define uncertainty and confidence intervals around the cost of each event. Earthquake losses are based on an article by Gregory Wallace: “The Ten Most Expensive U.S. Earthquakes,” *CNN Money*, August 25, 2014, <http://money.cnn.com/2014/08/24/news/economy/earthquakes-10-most-expensive/>.

⁶ SmarterSafer, *Bracing for the Storm: How to Reform U.S. Disaster Policy to Prepare For A Riskier Future*, April 2015.

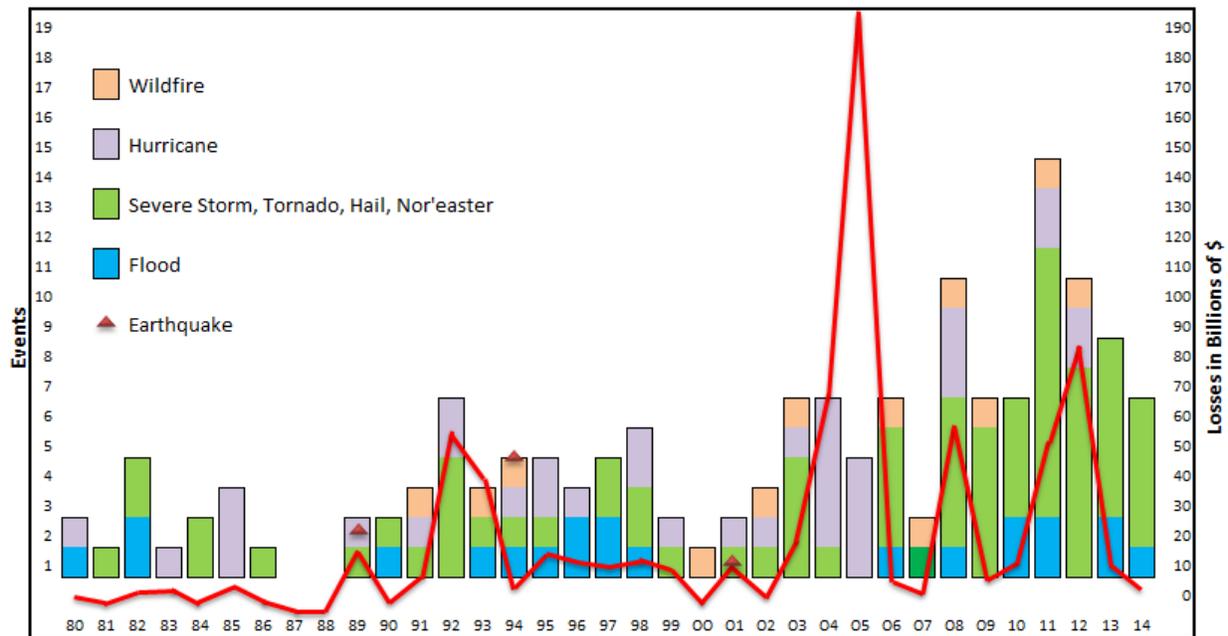


Figure 1: Billion Dollar+ Extreme Weather Events in Frequency and Losses from 1980-2014 (Earthquake Losses Included)⁵

and federal and state government agencies; and important decision makers, including utilities, homeowners and businesses should also participate.

The private sector will not undertake resilience investments just because it is sensible, but because it is economically prudent. Therefore, participating stakeholders need sufficient confidence that using incentives to achieve resilience will justify investments, underwriting and loan and grant programs. Decision makers want the certainty that they can offset the cost of implementing mitigation strategies. In this win-win scenario, all stakeholders should experience the expanded benefits and co-benefits of resilience, including reduced losses and operational continuity. Once incentives are adopted and standardized by leading private-sector stakeholders, the rest of the private sector should begin to follow.

Incentives should be an integrated set of solutions, and evolve with the changing field of resilience. Incentives programs should be developed to define entry points and streamline processes that can be easily understood and applied to ensure widespread usage and effectiveness. Incentivizing the means to achieve resilience before disasters occur focuses on monetizing the benefits realized by financial institutions and others for incorporating risk mitigation practices in the ordinary course of business.

While governments play an important role in disaster recovery, the need for recovery funding should be an option of last resort. Given the significant benefits of mitigation already demonstrated, all potential avenues to encourage such mitigation should be explored. MMC and CFIRE have identified key avenues to support mitigation investments which are summarized below.

- The interests of the insurance sector align substantially with pre-disaster concerns. Resilient buildings reduce the loss risks associated with property insurance issuance. Similarly,

building resilience strategies reduce the payouts for business interruption insurance, which frequently exceed amounts expended by insurers in compensation for property damage. Insurers can promote the adoption of enhanced, beyond-code mitigation standards for resilience [such as the Insurance Institute for Business and Home Safety (IBHS)'s FORTIFIED programs for residential and commercial buildings]. To incentivize the take-up of such standards, insurers can offer premium discounts to property owners who utilize the standards in construction or retrofit.

- Resilient properties also enhance the security of mortgage lenders. Therefore, banks and other lenders have perhaps the most potential to scale and transform the retrofit finance market by integrating performance-based resiliency requirements within their mortgage origination and refinancing programs. All other factors being equal, resilient properties constitute stronger mortgage loan collateral than less-resilient properties. This suggests that permanent mortgage loans on resilient properties, if pooled and sold as bonds, could enhance the credit quality of mortgage-backed securities.
- Developers and builders need to engage in resilience discussions, and realize that there is an untapped market for more-durable construction. From the property owner's perspective, a more-resilient property should increase the likelihood of securing debt financing. In addition, a more-resilient property—especially in areas prone to natural disaster—is likely to be more valuable than a less-resilient comparable property, thus resulting in enhanced sale prospects and (for commercial properties) better leasing performance.
- Corporate debt ratings, in appropriate cases, could recognize pre-disaster mitigation strategies. This approach would focus on companies whose assets are significantly concentrated in facilities or equipment in a single region or urban area prone to natural disasters, where such an event would have a profound effect on property loss and business discontinuity. Such companies would experience improved bond ratings, all other factors remaining equal, by adopting comprehensive resilience strategies. Similarly, industrial revenue bonds linked to the construction of resilient facilities in areas prone to natural disasters could realize enhanced ratings, other factors being equal.
- The development and adoption of appraisal and bond underwriting standards that recognize the valuation benefits of building resilience, all other factors being equal. Enhanced appraised values allow a borrower to leverage more mortgage financing for a given loan-to-value ratio. Conversely, for a specific loan amount, a more-resilient building will be better collateralized—that is, have a lower loan-to-value ratio—than a less-resilient comparable property. Similarly, bonds backed by resilient properties would carry higher ratings, thus minimizing interest expense to the issuer.
- Community investment decisions are not dissimilar to those in the private sector in that resilience to disasters positively affects a community's reputation as a place to establish and retain businesses. Resilience incentives for communities could consist of enhanced bond ratings for hazard-resistant municipal projects; the award of federal and/or state grants for the creation of either local mitigation grants, revolving loans or regulatory and tax programs that encourage resilience. Community regulatory and tax activities in support of resilience include the upgrade of local building codes; accelerated local permitting and inspection procedures for resilient properties; zoning benefits; more-favorable developer agreements for the construction of resilient properties; and more favorable tax treatment for resilient buildings and infrastructure.

- Utility incentives could include reduced insurance premiums to support the avoidance of interruption losses; a public utility commission policy that allows a small but immediate increase in rates to pay for system resilience enhancements; and enhanced bond ratings for projects that incorporate resilience strategies.

In order to assure the effective implementation of resilience strategies through regulatory and business-based decision making, stakeholders must determine the value of such strategies. They need better data and tools to identify localities with the highest risk, and to pinpoint where enhanced building code requirements and incentives would be most effective. New and improved software is needed to expedite the creation of financial products and other business processes that support incentivization. Stakeholders also need an enhanced flow of information to promote incentivization.

At the same time, a comprehensive incentives-based resilience framework must avoid disincentives, such as state insurance rate regulation that ignores risk-based pricing, which might limit the penetration of mitigation programs in the business arena.

All stakeholders are expected to experience substantial benefits of resilience following disasters—reduced financial and property losses; retention of business and employees, and related revenues after disasters; accelerated recovery and reduced recovery costs for owners, occupants and communities; reduction of resources required for relief and recovery; and, lessened demand on, and risk to, emergency response personnel and reduced expenditures for emergency response.

Beyond having more-resilient buildings and communities, stakeholders also may accrue additional economic benefits from establishing a system of private-sector incentives, including:

- Increased loan security for lending institutions and enhanced financing opportunities for borrowers and investors in buildings and infrastructure.
- Heightened stability in the insurance and reinsurance industries.
- Increased construction activity and jobs associated with achieving resilience.
- Enhanced community abilities to attract and retain quality developers and businesses.
- A reduction in the amount of damaged and contaminated materials and contents after a disaster event, which initially may pose health hazards and then must be disposed of in landfills or by incineration.

Even beyond the benefits listed above, the businesses themselves and society at-large can benefit from the added value of co-benefits—that is, the indirect benefits that arise from heightened resilience. Businesses, for example, can capture resilience-related image improvements, which can lead to an increase in long-run profits.⁷

While incentivization serves as a strategy to realize resilience goals, the identification and implementation of effective mitigation measures is paramount. Some of the most effective

⁷ See Rose. Co-benefits often occur irrespective of the occurrence of any disasters—a “no-regrets” strategy—that reaps benefits irrespective of future outcomes (p. 17). Co-benefits need to be expressed in monetary terms, so they can be viewed in the light that most businesses understand (p. 24).

mitigation strategies are outlined in Table 1. Specific mitigation measures are described with a relative magnitude of benefit-cost expected through their implementation. The specific cost-benefit ratio of these and other measures will be identified in the forthcoming revision and expansion of the *Mitigation Saves* report.

Table 1: Leading Mitigation Options

| | Flood | Wind | Earthquake | Wildfire |
|--|--|--|---|--|
| Residential | Elevate (Mh), remove (Hh), levee enhancement (Hh) | Shutters (Hh), roof-wall straps (Mh), roof-deck attachments (Mh), secondary water resistance (Mh), engineered tie-down systems for manufactured housing (Mh) | Brace cripple walls (Hh), strengthen soft story (Mh), secure water heater (Hm), secure furnishings and contents (Hh), purchase insurance (Ml), engineered tie-down systems for manufactured housing (Mh), drop-cover-and-hold-on training (Lh), emergency plan (Lh) | Adopt International Wildland-Urban Interface Code (Lh); require sprinklers in high-rise buildings (Lh) |
| Commercial | Remove buildings (Hh), elevate equipment (Mh), protect entrances (Lm), enhance levees (Hh), insure (Mm) | Shutters (Hh), roof-wall straps (Mh), roof-deck attachments (Mh), secondary water resistance (Mh); insure (Hm) | Secure MEP equipment (Hh); brace ceilings (Mh); secure furnishings, fixtures & equipment (Hh); BCP (Hh); insure (Mm); drop-cover-and-hold-on training (Lh) | Like residential |
| Industrial | Like commercial | Shutters (Hh), roof-deck attachments (Mh) | Like commercial | Like residential |
| Utilities and Transportation Lifelines | Elevate high-voltage transformers (Lm), stockpile replacement components (Lm), high-capacity culverts at road crossings (Lm) | Underground transmission and distribution lines (Mh), stockpile replacement components (Lm) | Accelerate pipe replacement (Hh), replace fragile equipment (Hh), secure equipment (Hh), adopt fuel management plan (Lh), greater design strength (Lh) | Like residential |
| Government | Like commercial | Like commercial | Like commercial | Like residential |

Terms in parentheses (Xy) refer to recent expenditures (X: H = high, M = medium, L = low) and likely benefit-cost ratio (y: h = high, m = medium, l = low)

Building Codes

The consistent adoption and enforcement of up-to-date building codes is the fundamental means of providing the nation with a baseline level of protection from disasters. However, many states and communities either lack codes all together or are on outdated versions of the code. While adoption of the code is important, effective enforcement is key to realizing the protections intended by the code.

Building codes are developed through a national model process, but ultimately amended and adopted by state and local governments. However, given the potential financial exposure post-disaster and the impact on the nation's citizens and its economy, the federal government should maintain a strong interest in the development, adoption and enforcement of building codes. Federal participation in the national code development process (and at state and local development and adoption processes where federal science findings can be applied) would be valuable in assuring federal priorities and federal agency-supported science are recognized.

In addition to all relevant federal funding at the community or project level coming with requirements to meet or exceed the latest building codes, the federal government can provide additional support to encourage the adoption and enforcement of current building codes. As states and localities struggle to address their fiscal constraints, training budgets are often one of the first items cut. Code officials are particularly impacted by such cuts since codes are regularly updated to reflect new technologies and practices. The recent recession has exacerbated this issue by reducing the code official workforce and placing an increased burden on those who remain as construction volumes pick up.

Federal support for training of code officials and providing technical assistance for both adoptions and enforcement will provide important signals to state and local governments.

Above-Code Provisions and Programs

While building codes set a minimum level of protection, there are certainly enhanced benefits for those communities or building owners that incorporate requirements that go beyond existing codes. Communities and building owners that implement such above-code options should be recognized based on their reduced exposure to a hazard.

Preliminary estimates by MMC experts suggest that designing buildings to be 50% stronger against earthquake loads and 50% higher against wind loads can increase costs on the order of 1%. The greater strength may reduce building impairment (collapse, red-tagging and yellow-tagging) by a factor of four in a large earthquake and by a factor of ten in tornadoes.

Following devastating tornadoes, the City of Moore, Oklahoma, implemented enhanced windspeed requirements, along with 11 detailing requirements, to ensure that buildings can resist all EF-1 and 2 tornadoes, which comprise 85% of all tornadoes affecting Oklahoma, and much of the footprint of the remaining EF3, 4 and 5 tornadoes. The City of Moore's 135-mph basic windspeed requirements makes buildings 125% stronger than under its previous code and 38% stronger than under current American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) 7-10 *Minimum Design Loads for Buildings and Other Structures* requirements. The City of Moore

estimates that the code change costs on the order of \$1 per square foot, which is roughly 1% additional construction cost. It therefore seems practical and potentially cost-effective for much of the rest of the United States, especially in tornado-prone portions east of the Rocky Mountains.

Existing Building Retrofits

While building codes and above-code programs are highly effective in advancing the resilience of new construction and major renovations, existing buildings make up the vast majority of the building stock. Implementing mitigation measures in existing buildings is essential to realizing community-level resilience.

In many cases, the business case for retrofit is significant, but often unclear to decision makers. Effective incentivization strategies can help address this disconnect.

One notable and oft-cited example is the seismic retrofit of Anheuser Busch's Van Nuys brewery. It underwent a retrofit program costing \$11 million (slightly less than 1% of the total facility replacement cost) in the 1980s, just prior to the 1994 Northridge earthquake. Anheuser-Busch estimated that their facility would have suffered a direct property loss of about \$350 million from the Northridge earthquake had there been no seismic strengthening, or \$750 million, including business interruption losses—over 60 times the cost of the mitigation program (EQE International, 1999).

San Francisco's Community Action Plan for Seismic Safety (CAPSS) led that city to adopt mandatory strengthening of soft-story, high-occupancy wood-frame buildings (Porter, p. 4), which house 8% of the city's population. Local financial institutions have supported the CAPSS loans for mandatory retrofits because of their dedication to having operations in the city (Rodin, p. 145). The City of Los Angeles developed a highly publicized earthquake plan, *Resilience by Design*, that advocates mandated retrofit of soft first-story buildings and concrete buildings built before the 1976 *Uniform Building Code* was enforced (Mayoral Seismic Safety Task Force, pp. 39 and 44).

FEMA could create a component under the pre-disaster mitigation grant program that would allow local communities to receive grants and distribute funds to private businesses and/or residents to implement approved mitigation strategies. Alternatively, a community could use grants to support a low-interest loan program that allows longer-term investment in private-sector mitigation, both for businesses and residences. Such a program could fund local governments to provide revolving loans to property owners. Repayment and interest funds would then be re-invested in other properties, thereby creating an on-going program.

Lifelines and Utilities

A recent Institute project for the Department of Homeland Security Office of Infrastructure Protection looked at the opportunity to support community resilience by development of a Critical Infrastructure Security and Resilience Risk Management Process (CISR-RMP).⁸ This CISR-RMP

⁸ See *The Case for a Business Process Engineering Approach to Managing Security and Resilience Of Lifeline Infrastructures and Regional Communities* (https://www.nibs.org/resource/resmgr/IRDP/CISR-RMP_WhitPpr151116.pdf) for a summary of the project and *A Business Process Engineering Approach to Managing*

is intended to provide a workable, scalable, repeatable, defensible, integrable and practical process that lifeline critical infrastructures (CIs), local governments (especially emergency management) and regional public-private partnerships (P3s) or coalitions can use collaboratively to rationalize the allocation of scarce and constrained resources for security and resilience. Such a process would be fully integrated with on-going, significant business processes, such as asset management, continuity planning and capital development planning and budgeting, to assure risk management becomes a standard, routine business practice and avoids duplicative data collection or evaluation processes.

Significant portions of the human, material and economic losses from disasters occur because such events disrupt the delivery of vital services of lifeline CIs, including energy, water and waste water, transportation and communications. Without these CIs, communities can neither recover nor long survive. Any one infrastructure is interdependent with others, so the direct loss of one is exacerbated as an initial failure cascades to other infrastructures in a “chain reaction” that can spread losses widely throughout a region and beyond. Additionally, such infrastructures face long-term underinvestment in maintenance, rehabilitation and replacement, even as population and demand for their services increase. This underinvestment has stretched existing infrastructures to meet higher demand by operating closer to their design maxima and keeping aging facilities in service well beyond their design lives, making them more vulnerable to whatever hazards may occur.

Some large and forward-thinking jurisdictions and utilities have adopted sophisticated risk management as standard operating procedures—often using unique, proprietary or narrowly threat-specific risk analysis methods that cannot readily be transferred or integrated. Outside of these, most lifelines and local jurisdictions have actually performed very little risk analysis that leads to significant decisions and no resilience analysis beyond continuity of operations/continuity of government planning. Most jurisdictions and lifeline operators have chosen to simply comply with federal and state requirements (often at a cursory level), or treat risk management as a periodic exercise (e.g. five-year special event). Several stated that requirements from an external authoritative source (e.g., higher government, industry standards, or regulatory agency) can ease the allocation of the time and limited funds to risk analysis because it removes the need to justify the effort.

One reason for the limited use of risk analysis tools is the widely held belief among local agencies and publicly owned utilities that if disaster strikes, the federal or state governments will step in to pay for the majority of the costs of recovery and restoration, thus discounting the value of investments in prevention, protection or pre-event mitigation. One respondent went so far as to say, “Investing 100-cent dollars of local taxpayer or ratepayer money *before* a highly uncertain future event seems irrational compared to paying 25-cent dollars of local taxes [the typical local share, with 75% from the federal government] *after* the event has become a certainty, *if and when* it ever does.”

A near universal issue, especially in the private sector, is fear of legal liability and negligence suits associated with conducting risk analyses and then experiencing casualties or damages due to a known risk that was determined to be too low a priority to justify investment. Another issue is the

costs associated with identifying risk that requires substantial investment to mitigate, but little or no incremental revenue or routine cost savings.

To support an effective CISR-RMP, the following components are required:

- Compatible risk and resilience tools across sectors to support comparability, interdependencies analysis and roll-up into increasingly larger pictures of community, state, region and national resilience.
- Tools developed through research, development and deployment efforts with long-term support, accompanied by development of a detailed protocol for defining the minimum effective set of data, and establishing confidentiality safeguards and penalties for violations.

Conclusion

In recent years FEMA, other federal agencies and private-sector organizations have been engaged in an effort to identify ways to reduce the impact of disasters on the American public and the infrastructure within our communities. Even before this effort, the Institute had been working on providing guidance and science to improve the built environment and strengthen our buildings and infrastructure against all hazards, natural and man-made. While these efforts have made significant improvements in building codes, new construction and some local communities, they have not penetrated privately owned property as much as we would like. Government can only do so much, and the remainder requires incentivizing private property owners into making the necessary steps. To that end, government can help or hinder progress with the policies it implements. Removing existing impediments can help spur private-sector entities to adopt incentives that can lead to increased resilience and the subsequent reduction in losses. Likewise, new regulation could stifle progress and increase the long-term costs to the American taxpayer. This testimony provides a pathway or roadmap for the creation of incentives that could move hazard mitigation forward. Your assistance with removing obstacles and providing good public policy and leadership is necessary to help move all of the stakeholders in the right direction.

This testimony has identified many possible incentivization strategies to support mitigation against hazards. The next step is implementing the public-private incentives to support resilience. These include expanding existing programs or creating new programs (such as those modeled on successful green building programs); and developing supporting business and investment processes, programs tailored to utilities and community-based initiatives. With these approaches, resilience should become part of accepted business practices, and integral to maintaining and enhancing the nation's economy.

Recommendations for Congressional Action

- Support the development and adoption of current, strong building codes by:
 - Requiring all construction projects provided with federal dollars meet or exceed the latest building codes.
 - Requiring all states and localities that receive funding associated with community development, infrastructure, public safety or community governance to adopt and effectively enforce building codes that meet or exceed the latest building codes. The

- requirements to adopt and enforce energy codes as required by the American Recovery and Reinvestment Act resulted in a marked increase in code adoptions.
- Requiring all buildings that house federal employees (whether leased or owned) to meet or exceed the latest building codes at the time of first occupancy and after subsequent substantial renovations.
 - Establishing a cross-agency [DHS/FEMA, the U.S. Department of Housing and Urban Development (HUD), National Institute of Standards and Technology (NIST), U.S. Department of Energy (DOE)] program focused on providing scientific and economic data associated with the effectiveness of building codes and their impacts on communities, education and training for code professionals, technical assistance and evaluation tools for code department effectiveness.
 - Requiring federal agencies to actively engage in the codes and standards development process, alongside industry stakeholders, to assure the consideration of federal priorities and the incorporation of federally supported research findings. [For example, the Building Seismic Safety Council (BSSC) Code Resource Support Committee (CRSC) under the sponsorship of FEMA monitors and contributes to the model codes and standards development process particularly, for the *International Building Code* (IBC), the *International Existing Building Code* (IEBC) and the *International Residential Code* (IRC) to ensure that they remain substantially equivalent to the latest edition of the *NEHRP Recommended Provisions* as defined by the ICSSC under Executive Order 13747 as well as other FEMA earthquake design guidance publications for new and existing buildings. The CRSC also supports related activities such as outreach and education materials to ensure that seismic hazards continue to be addressed. The CRSC also develops and submits changes on material that is not (or is inadequately) addressed by the *NEHRP Recommended Seismic Provisions* in other relevant standards publications. The CRSC works with representative organizations, such as ASCE, IBHS, National Association of Home Builders (NAHB) and Structural Engineers Association of California (SEAOC), to identify and address these issues. FEMA should develop coordinated training for code officials at the federal level—as is done for fire officials at the National Fire Academy.]
- Encourage investment in mitigation by the private sector through enhancing existing federal programs by:
 - Expanding federal home renovation programs to include mitigation improvements.
 - Reducing interest rates for residential mortgages, provided through Fannie Mae and Freddie Mac, on properties built to approved mitigation standards. This approach was recently introduced by Fannie Mae for mortgages on green-certified residential properties.
 - Encouraging the Securities Exchange Commission to recognize investments by resilience-based real estate investment trusts (REITs), private equity funds and bond issuances. Resiliency strategies would reduce investment risk and improve portfolio operating performance. Congress may also wish to require disclosure of vulnerabilities to disasters in SEC filings.
 - Incorporating technical assistance and resilience requirements into Small Business Administration (SBA) loans, guaranteed by the federal government and made by private lenders or community development financial institutions,

- to finance building resiliency upgrades. SBA loans are already a key source of building acquisition and renovation financing for small businesses, although such loans lack specific resiliency requirements.
- Offering federal tax incentives for building owners participating in mitigation programs. Such incentives can parallel those provided for energy efficiency and green buildings.
- Offering federal grant programs to support participation in approved mitigation initiatives.
- Federal investments and programs should reflect the importance of investment in mitigation by:
 - Encouraging federal, state and local agencies to share their resilience strategies (to the extent practical) with the private sector to both demonstrate what is possible and to build private-sector demand and capacity. Include the anticipated life-cycle costs where appropriate.
 - Funding federal agency mitigation programs at a level commensurate with the future exposure avoided.

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