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# Achieving Disaster Resilience in U.S. Communities

*Executive Branch, Congressional, and Private-Sector Efforts*

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CSIS

CENTER FOR STRATEGIC &  
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Irene W. & C.B.  
PENNINGTON  
FOUNDATION



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*A Report of the CSIS Homeland Security  
and Counterterrorism Program*

***November 2014***

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Although this report benefited greatly from many individuals' expertise, the content is the sole responsibility of the authors and should not be construed to represent the individual opinion of any expert or group external to the Center for Strategic and International Studies. Any errors contained herein are the responsibility of the authors alone.

# Executive Summary

The increased frequency and intensity of natural disasters, the rising amount of economic losses, and the mounting costs of providing relief indicate the growing importance of disaster<sup>1</sup> resilience. Disasters have far-reaching consequences, ranging from the most basic physical injuries and property losses to long-term psychological, economic, and cultural damage. Merely supplementing resources to address the aftermath of disasters—rather than mitigating risks and putting in place key elements in advance of a disaster—is not a sustainable model for community resilience. Additionally, failure to utilize the resources of all public- and private-sector<sup>2</sup> stakeholders to develop long-term planning mechanisms leaves communities vulnerable to repeated, high levels of damage and destruction.

A “whole of community” approach that addresses each stage of the emergency management cycle offers a more pragmatic, workable model for improving resilience. Based on comparative advantage, federal executive agencies, the U.S. Congress, and the private sector can all contribute to certain elements within each stage. Philanthropic organizations can prove especially important in the long-term planning and recovery phases due to their ability to pool private funding and act independently of election cycles.

The ability of communities to set goals, measure risk and vulnerability, and identify gaps in capabilities are critical steps on the path toward achieving resilience. Understanding threats and prioritizing mitigation efforts are central to efficient and effective emergency management. Recent examples of incentivizing mitigation efforts illustrate federal, state, and local governments’ recognition of the need to pursue this strategy. Incentives help move local communities beyond problem identification and toward options evaluation, implementation, and outcomes testing. By analyzing and sharing results among levels of government and the private sector, communities can benefit by leveraging past successes and best practices. Due, for instance, to the constant impact of disasters along the Gulf Coast of the United States, the lessons from those affected communities can help improve the resilience of other places across the nation and the world.

Legislative bodies must learn from mitigation efforts, too, seeking ways to authorize and reinforce cost-saving procedures. Flexible and scalable legislation ensures resources

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1. For the purposes of this report, the term “disaster” means a natural disaster, unless indicated otherwise.

2. For the purposes of this report, the term “private sector” includes all businesses, nongovernmental organizations, and philanthropic organizations.

can match the unique effects of each disaster. Spreading the costs of disaster spending across all levels of government and the private sector can also reduce the burden on taxpayers and potentially increase participation in the insurance market, thereby lowering certain premiums.

Spreading costs and sharing capabilities require strong relationships between the public and private sectors. Partnerships built on trust and understanding of the goals and responsibilities of each party prove the most successful in fulfilling the needs of communities. Maintaining a long-term vision of the requirements for healthy, sustainable communities and harnessing the power of public-private partnerships and individual efforts represent integral factors for achieving resilience.

The following table lists the study team’s main findings and recommendations.

<i>FINDING</i>	<i>RECOMMENDATION</i>
1. The Department of Homeland Security (DHS) has not developed standard, quantifiable readiness and performance metrics for state and local governments to identify gaps and assess needs for disaster preparedness and resilience.	DHS should: <ul style="list-style-type: none"> <li>• identify and standardize impact measurements for all Threat and Hazard Identification and Risk Assessments and after-action reports, then develop accompanying targets and performance metrics for the core capabilities</li> </ul>
2. Robust analysis of disaster preparedness and response efforts across different jurisdictions does not exist.	<ul style="list-style-type: none"> <li>• consider involving knowledgeable stakeholders in each core capability area in the development and determination of metrics</li> <li>• make available more data and analysis of data from the assessments of different jurisdictions</li> </ul>
3. While federal executive branch agencies have recently enhanced their focus on hazard mitigation, mitigation efforts are still underrepresented in the distribution of grant funding.	Federal executive branch agencies should: <ul style="list-style-type: none"> <li>• advocate for pre- and post-disaster mitigation grants to receive a greater share of overall preparedness and response assistance funding</li> </ul>
4. Federal executive branch agencies have not developed a clear framework for waiving regulatory and other requirements before, during, and after disasters.	Federal executive branch agencies should: <ul style="list-style-type: none"> <li>• create a framework that includes general and incident-specific waivers, the need for a request, and any limitations or exceptions</li> </ul>
5. State and local governments’ waiver and credentialing policies require more flexibility for essential response missions. Mission assignments among all executive branch agencies may also benefit from flexibility.	State and local governments should: <ul style="list-style-type: none"> <li>• explore available options for transferring risk to the federal government</li> <li>• prepare memorandums of understanding (MOUs) to improve flexibility in waiver and credentialing policies</li> </ul>

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*FINDING*

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*RECOMMENDATION*

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6. Most significant changes to disaster legislation occur after a large-scale domestic catastrophe.
7. While the Post-Katrina Emergency Management Reform Act of 2006 addressed the need for integration and interoperability, recent legislative changes—such as those in the Sandy Recovery Improvement Act of 2013—have focused on increasing management, efficiency, and flexibility in disaster preparedness and response.
8. Congress has already taken steps to reduce the federal share of disaster relief funding. However, there may be additional methods for avoiding future disaster costs.
9. Government and the private sector have improved communication in recent years, but coordination efforts require more give-and-take.
10. Crowdsourcing data offers many opportunities for government agencies and businesses to leverage available information and solve a range of issues.

All executive branch agencies should:

- improve flexibility in establishing mission assignments

Congress should:

- pursue scalability of response and recovery assistance through:
  - exercising oversight to critically evaluate programs
  - making targeted changes to legislation
  - authorizing recent Federal Emergency Management Agency (FEMA) pilot programs that improve efficiency
- improve the funding flexibility of the Substance Abuse and Mental Health Services Administration to address mental health impacts for different disasters
- continue to explore different ways to increase the amount of insured and reinsured assets in the United States
- statutorily limit the availability of assistance to all uninsured infrastructure in communities in Special Flood Hazard Areas
- reexamine thresholds for private-sector liability

FEMA's National Business Emergency Operations Center should:

- create a national database that compiles information on all relevant state regulations
- host a web portal for verified public and private entities to update and exchange information

State and local public-private partnerships should:

- write MOUs that detail responsibilities and guarantee protection
- rotate representation from different businesses within an industry

Emergency management agencies and the private sector should:

- continue research and development efforts on exploiting crowdsourced data for better situational awareness

*(continued)*

<i>FINDING</i>	<i>RECOMMENDATION</i>
11. Small businesses need improved incentives to take action to effectively prepare for the effects of future disasters.	Government and the private sector should: <ul style="list-style-type: none"> <li>• examine other methods of mitigation promotion, such as incentivizing continuity of operations planning with low-interest loans</li> </ul>
12. Planning for the long-term effects of disasters can be easily overlooked in disaster preparedness and recovery. Private-sector efforts encourage government to heed long-term planning.	Government and the private sector should: <ul style="list-style-type: none"> <li>• explore joint public-private efforts to identify, plan, and implement long-term risk and vulnerability reduction strategies that account for all potential community impacts, such as health impact assessments</li> </ul>

# 1 Introduction

When Hurricane Katrina swept across the Gulf Coast of the United States in 2005, it subjected communities to massive destruction and devastation. It destroyed homes, closed businesses, and left entire populations in need of food, water, shelter, medical care, and other basic requirements for survival. Nearly a decade later, some affected communities are still recovering from the impact of the storm. For example, although Southeast Louisiana has seen great economic improvements since Hurricane Katrina, it still struggles with population and land loss.<sup>1</sup>

While hurricanes continue to strike the Gulf Coast, several other types of natural disasters combine to threaten communities across the nation year-round. These disasters have increasingly affected the well-being of individuals and families and hampered the ability of businesses, government, and other organizations to continue operating and providing essential services. The increase in the frequency and magnitude of disasters has severely stressed the resources of communities and the ability of the nation as a whole to rebound from such devastation.

The resilience of communities determines the extent to which they can sustain themselves in the face of disasters. This report adopts the definition of resilience used by the federal government: “the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.”<sup>2</sup> To achieve these objectives, stakeholders put efforts in place throughout the emergency management cycle, which runs through the five mission areas of protection, prevention, mitigation, response, and recovery.<sup>3</sup>

Responsibility for improving community resilience shifts among stakeholders over time, with private actors often assuming a greater burden once initial government recovery efforts conclude. For instance, since Hurricane Katrina, the number of arts and culture nonprofits serving the recovery needs of New Orleans has increased significantly.<sup>4</sup> Given the increasing frequency and magnitude of disasters, the participation of each stakeholder

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1. George Hobor, Allison Plyer, and Ben Horwitz, “The Coastal Index: The Problem and Possibility of Our Coast,” The Data Center, April 20, 2014, [http://www.datacenterresearch.org/reports\\_analysis/the-coastal-index/](http://www.datacenterresearch.org/reports_analysis/the-coastal-index/).

2. Barack Obama, “Presidential Policy Directive/PPD-8: National Preparedness,” March 30, 2011, <http://www.dhs.gov/presidential-policy-directive-8-national-preparedness>.

3. U.S. Department of Homeland Security (DHS), “National Preparedness Goal,” September 2011, 1, [http://www.fema.gov/media-library-data/20130726-1828-25045-9470/national\\_preparedness\\_goal\\_2011.pdf](http://www.fema.gov/media-library-data/20130726-1828-25045-9470/national_preparedness_goal_2011.pdf).

4. Allison Plyer, Elaine Ortiz, Ben Horwitz, and George Hobor, “The New Orleans Index at Eight,” Greater New Orleans Community Data Center, August 2013, 40, [https://gnocdc.s3.amazonaws.com/reports/GNOCDC\\_NewOrleansIndexAtEight.pdf](https://gnocdc.s3.amazonaws.com/reports/GNOCDC_NewOrleansIndexAtEight.pdf).

in achieving resilience throughout each stage in the emergency management cycle has become vitally important. Additionally, as budgets continue to stagnate or shrink, finding efficient, cost-saving solutions has become a priority among all organizations involved. The development of multiple funding streams from the public and private sectors has emerged as an attractive and mutually beneficial option to ensure sustainability of efforts.

Promoting and ensuring cooperation among branches and levels of government and the private sector remains a significant challenge on the path forward. Since each group has separate responsibilities and, in many cases, particular priorities, finding common ground to enact positive change will require continued collaboration. This report looks at steps that could be taken by each group in order to improve their individual efforts and possible collective actions that could improve national-level efforts on community resilience.

## Methodology

This report, made possible by the generous support of the Irene W. and C.B. Pennington Foundation, is an expansion of a 2013 CSIS white paper<sup>5</sup> that described thoughts, viewpoints, and findings gleaned from the *CSIS-Pennington Family Foundation Series on Community Resilience*. Cohosted by the CSIS Homeland Security and Counterterrorism Program and the Pennington Family Foundation, the series included several in-depth discussions involving government officials, subject matter experts, academics, philanthropists, non-governmental organizations (NGOs), and business and community leaders, all focusing on how best to strengthen the resilience of U.S. communities in disaster-prone areas.

For this report, CSIS used open-source research and several one-on-one, not-for-attribution interviews with executive branch officials, congressional officials, and other key stakeholders drawn from corporations, NGOs, philanthropic organizations, and other nonprofits. While the CSIS study team recognizes the shortfall in input from state and local governments, it proved impractical to examine the laws, regulations, and policies of each of the nation's 54 states and territories. That said, the team did explore the involvement of state and local governments in public-private partnerships (PPPs); the sections of the report on executive branch and congressional actions, by necessity, center largely on the federal level. The findings and recommendations from this report are intended to provide guidance to all individuals and groups interested in making informed decisions about improving disaster resilience.

## Outline of Report

Following the introduction, the second chapter of this report addresses recent trends in disasters, the consequences for different elements of the community, and the involvement

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5. Stephanie Sanok Kostro, Ashley Nichols, and Abigail Temoshchuk, "White Paper on U.S. Disaster Preparedness and Resilience: Recommendations for Reform" (Washington, DC: CSIS, August 27, 2013), <http://csis.org/publication/us-disaster-preparedness-and-resilience>.

of key stakeholders. The next three sections (chapters 3 through 5) focus on the specific issues and areas for improvement for the different stakeholders in light of the situation outlined in Chapter 2. These chapters discuss potential executive branch and congressional actions and explore the role that might be played by the private sector and PPPs. Finally, Chapter 6 contains conclusions and recommendations on improving community resilience to disasters.

# 2 | Background

## Trends

In recent years, the United States has faced a growing number of severe natural disasters,<sup>1</sup> presenting a variety of challenges for the nation—spanning the spectrum from federal, state, and local levels of government to for-profit, nongovernmental, and philanthropic organizations—and its disaster response, relief, and recovery architecture. Over the past decade, the United States has experienced, on average, more than seven severe weather events per year exceeding \$1 billion in damage apiece, compared to an annual average of only two such events throughout the 1980s.<sup>2</sup>

This increase in severe natural disasters in the United States correlates with a significant increase in the number of all natural disasters in the United State and worldwide.<sup>3</sup> Figure 2.1 reveals that the number of natural disasters worldwide has more than doubled since the mid-1980s. According to the United Nations Office for Disaster Risk Reduction, the average number of storms, floods, and extreme temperature disasters have increased approximately two, three, and five and a half times the 1980s average, respectively.<sup>4</sup>

Man-made<sup>5</sup> or technological disasters follow a trend similar to that of natural disasters. A recent report indicates that although the number has decreased since its peak in the decade between 2000 and 2009, the average number of man-made disasters has nearly tripled since the 1970s.<sup>6</sup> Natural disasters can also trigger technological disasters, such as the March 2011 meltdown of the Fukushima Daiichi nuclear reactors after a tsunami in

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1. For the purposes of this report, the term “severe natural disaster” means a a disaster inflicting at least \$1 billion in damage.

2. Adam B. Smith and Richard W. Katz, “U.S. Billion-Dollar Weather and Climate Disasters: Data Sources, Trends, Accuracy, and Biases,” *Natural Hazards* 67, no. 2 (June 2013): 388, <http://www1.ncdc.noaa.gov/pub/data/papers/smith-and-katz-2013.pdf>; National Climatic Data Center, “Billion-Dollar Weather/Climate Disasters: Table of Events,” 2013, <https://www.ncdc.noaa.gov/billions/events>.

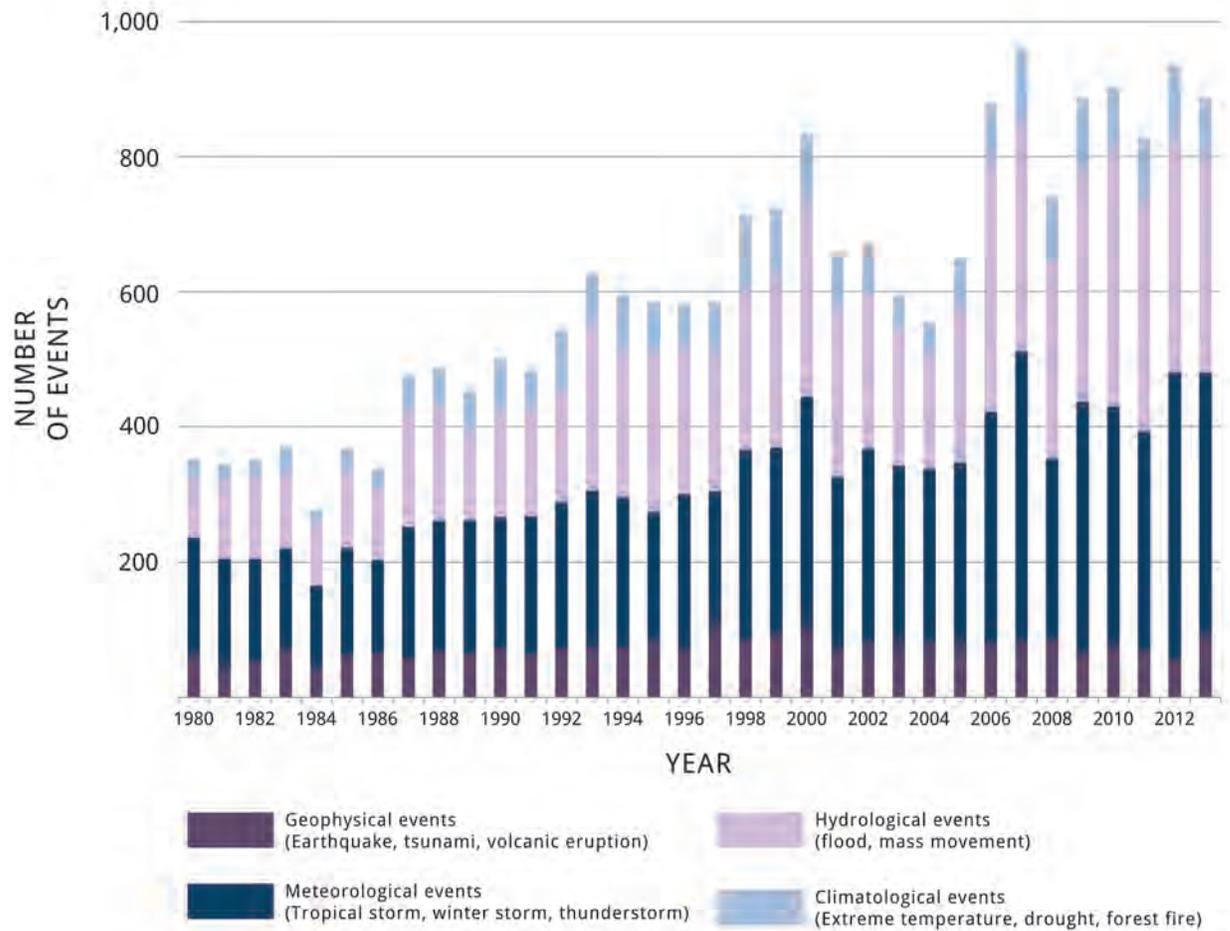
3. Munich Reinsurance Company, Geo Risks Research, NatCatSERVICE, “2013 Natural Catastrophe Year in Review,” January 7, 2014, 7, 18, <http://www.iii.org/sites/default/files/docs/pdf/MunichRe-010714.pdf>.

4. UN Office for Disaster Risk Reduction (UNISDR), “Number of Climate-Related Disasters around the World (1980–2011),” June 13, 2012, [http://www.preventionweb.net/files/20120613\\_ClimateDisaster1980-2011.pdf](http://www.preventionweb.net/files/20120613_ClimateDisaster1980-2011.pdf).

5. For the purposes of this report, man-made disasters include major fires and explosions, aviation and space disasters, shipping disasters, rail disasters, mining accidents, collapse of buildings/bridges, and miscellaneous events (including terrorism) but exclude war, civil war, and warlike events. Swiss Re, “Natural Catastrophes and Man-Made Disasters in 2013,” *sigma* 1 (2014): 45, [http://media.swissre.com/documents/sigma1\\_2014\\_en.pdf](http://media.swissre.com/documents/sigma1_2014_en.pdf).

6. *Ibid.*, 2.

**Figure 2.1. Loss Events Worldwide, 1980–2013**



Source: Munich Reinsurance Company, Geo Risks Research, NatCatSERVICE.

Note: Loss events include all natural disasters that cause any amount of property damage and/or fatalities. Munich Reinsurance Company, Geo Risks Research, NatCatSERVICE, “Loss Database for Natural Catastrophes Worldwide,” 1, [http://www.munichre.com/site/corporate/get/documents\\_E-1117790723/mr/assetpool.shared/Documents/5\\_Touch/Natural%20Hazards/NatCatService/catastrophe\\_classes\\_touch\\_en.pdf](http://www.munichre.com/site/corporate/get/documents_E-1117790723/mr/assetpool.shared/Documents/5_Touch/Natural%20Hazards/NatCatService/catastrophe_classes_touch_en.pdf).

Japan.<sup>7</sup> This evidence illustrates an even greater need to focus on the resilience of all vulnerable communities and infrastructure. Therefore, government and the private sector must prepare to withstand the losses associated with the growing threat of all types of disasters.

## Consequences

The rising costs of disasters have significantly affected the ability of all levels of government and the private sector to respond and provide relief to distressed communities. Increases in federal relief spending and insurance costs, small business closures, and

7. Mark Holt, Richard J. Campbell, and Mary Beth Nikitin, “Fukushima Nuclear Disaster,” Congressional Research Service, January 18, 2012, 1, <http://www.fas.org/sgp/crs/nuke/R41694.pdf>.

disaster-related mental health issues all illustrate negative consequences of the upward trend in natural disasters.

## MONETARY COSTS

While disasters have caused great losses of life and property for many years, Hurricane Andrew's impact in South Florida in 1992 demonstrated the loss potential of catastrophic disasters in areas with high property values.<sup>8</sup> As the number of severe natural disasters in the United States has increased since then, so too has the dollar amount of insured and uninsured losses. Total (insured and uninsured) losses from natural disasters in the United States have surpassed \$50 billion five of the last ten years, a total never reached throughout the 1980s.<sup>9</sup> Additionally, insured losses from thunderstorms alone have topped \$10 billion in each of the last six years.<sup>10</sup> The increase in losses places significant strain on public and private resources to provide disaster relief. A lack of resources to match the magnitude of the disaster can lead to the failure of communities and businesses to adequately respond to and recover from such events.

### *Insurance*

Due in part to the increase in disaster losses, worldwide insurance premiums, including premiums on all types of insurance (i.e., not only disaster-related insurance), have increased steadily over the past few decades; net premiums have experienced growth in all but three years since 1971.<sup>11</sup> Though the causes for rate increases are varied, data from the Insurance Information Institute (III) show that the percentage of private insurer losses resulting from catastrophic events<sup>12</sup> has risen considerably in recent decades.<sup>13</sup> Since insurance companies utilize risk-based modeling to determine insurance premiums, if the threat of natural disasters continues to rise, ceteris paribus, homeowners and businesses will likely see continued rate hikes.<sup>14</sup> Furthermore, as computer-generated risk models become more complex and able to narrow the threat and vulnerability to specific geographic regions, certain communities may experience exponential rate increases.<sup>15</sup> Rising premiums, especially for high-risk insurance (e.g., flood, earthquake, and landslide), can lead to tremendous financial strain for many people and may cause policyholders to opt out of coverage.

The United States has experienced this issue firsthand with the government's National Flood Insurance Program (NFIP). When a recent recalculation of risk sent premiums

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8. Munich Reinsurance Company, "Severe Weather in North America: Perils-Risks-Insurance: Executive Summary," 2012, 5, [http://www.munichreamerica.com/site/mram/get/documents\\_E1449378742/mram/assetpool\\_mr\\_america/PDFs/3\\_Publications/ks\\_severe\\_weather\\_na\\_exec\\_summary.pdf](http://www.munichreamerica.com/site/mram/get/documents_E1449378742/mram/assetpool_mr_america/PDFs/3_Publications/ks_severe_weather_na_exec_summary.pdf).

9. Munich Re, "2013 Natural Catastrophe Year in Review," 8.

10. *Ibid.*, 13.

11. *Ibid.*, 39.

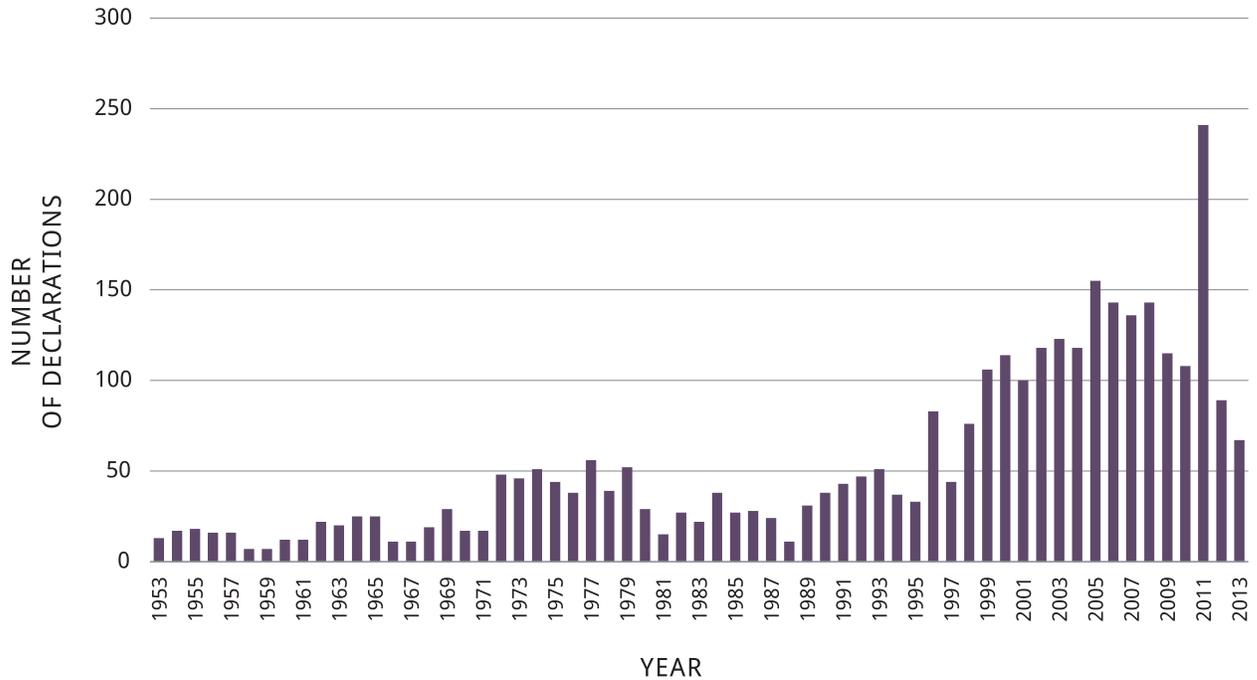
12. Events resulting in more than \$25 million in direct insured losses to property.

13. Munich Re, "2013 Natural Catastrophe Year in Review," 37.

14. Insurance Information Institute (III), "Catastrophes: Insurance Issues," April 2014, [http://www.iii.org/issues\\_updates/catastrophes-insurance-issues.html](http://www.iii.org/issues_updates/catastrophes-insurance-issues.html).

15. *Ibid.*

**Figure 2.2. Federal Disaster Declarations, 1953–2013**



Source: CSIS analysis of data from Federal Emergency Management Agency, “FEMA Disaster Declarations Summary—Open Government Dataset,” April 4, 2014, <http://www.fema.gov/media-library/assets/documents/28318?id=6292>.

skyrocketing in certain areas, constituents facing drastic rate increases pressured their congressional representatives to pass new legislation to ease the burden on home and business owners in flood-risk zones.<sup>16</sup> Many questions still remain about the best methods for spreading risk and preventing drastic premium increases.

### *Federal Disaster Relief*

Figure 2.2 shows that the president of the United States has, on average, issued a growing number of federal disaster declarations over the years. This increase is likely due, in part, to the increased severity and cost of natural disasters. Some experts also argue that the increase reflects greater reliance by states and municipalities on the federal government to fund disaster response and recovery.<sup>17</sup>

Because disaster declarations activate federal assistance programs and funds, changes in federal disaster relief spending correlate directly with the increase in declarations. A recent report indicates that from fiscal year (FY) 2011 to FY 2013, the U.S. federal

16. Federal Emergency Management Agency (FEMA), “Flood Insurance Reform,” last updated July 24, 2014, <http://www.fema.gov/flood-insurance-reform>.

17. J. David Cummins, Michael Suher, and George Zanjani, “Federal Financial Exposure to Natural Catastrophe Risk,” in *Measuring and Managing Federal Financial Risk*, ed. Deborah Lucas (Chicago: University of Chicago Press, 2010), 62.

government spent approximately \$136 billion in response to severe weather events.<sup>18</sup> This figure exceeds the Office of Management and Budget's estimate of federal spending on all such events from 2000–2009, which includes the most expensive natural disaster in U.S. history, Hurricane Katrina.<sup>19</sup> Although debate exists over the exact inputs to determine federal relief spending, the recent increase remains noteworthy.<sup>20</sup> The reason for this surge in costs is a subject of debate among experts, with a rise in urbanization, property values, and the amount of vulnerable infrastructure often cited as contributing factors, in addition to the overall increase in the number and severity of meteorological and climatological disasters.<sup>21</sup>

## COMMUNITIES

The growing frequency and costs of natural disasters have taken a toll on communities across the United States. As a result of Hurricane Katrina in 2005, nearly 2,000 people lost their lives and more than one million were displaced from their homes.<sup>22</sup> In Louisiana alone, damage forced 92,000 families to temporarily live in mobile homes and left nearly one million in need of housing and personal property replacement assistance.<sup>23</sup> Natural disasters have a negative impact not only on lives and homes but also on critical infrastructure, businesses, and the health of communities.

### *Critical Infrastructure*

Natural disasters can cause damage and destruction to every element of a community's infrastructure. In total, the Department of Homeland Security (DHS) outlines 16 different critical infrastructure sectors in its current National Infrastructure Protection Plan (NIPP), including transportation, communications, energy, public health, agriculture, and commercial and government facilities.<sup>24</sup> Due to the interconnectedness among sectors, damage to one can render others ineffective. For example, within one day of Hurricane Sandy's landfall in the northeastern United States in 2012, over eight million facilities, businesses, and homes lost power, which directly affected the functioning of, among other industries, fuel distribution.<sup>25</sup> The disruption of fuel supply networks affected the capabilities of first

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18. Daniel W. Weiss and Jackie Weidman, "Disastrous Spending: Federal Disaster-Relief Expenditures Rise amid More Extreme Weather" (Washington, DC: Center for American Progress, 2013), [www.americanprogress.org/issues/green/report/2013/04/29/61633/disastrous-spending-federal-disaster-relief-expenditures-rise-amid-more-extreme-weather/](http://www.americanprogress.org/issues/green/report/2013/04/29/61633/disastrous-spending-federal-disaster-relief-expenditures-rise-amid-more-extreme-weather/).

19. Office of Management and Budget (OMB), "OMB Report on Disaster Relief Funding to the Committees on Appropriations and the Budget of the U.S. House of Representatives and the Senate," September 1, 2011, 3, [http://www.whitehouse.gov/sites/default/files/omb/assets/legislative\\_reports/disaster\\_relief\\_report\\_sept2011.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/legislative_reports/disaster_relief_report_sept2011.pdf).

20. Weiss and Weidman, "Disastrous Spending."

21. Munich Re, "Severe Weather in North America: Executive Summary," 2–6.

22. FEMA, "Louisiana Recovery Office," last updated July 24, 2014, <http://www.fema.gov/louisiana-recovery-office>.

23. Ibid.

24. DHS, "NIPP 2013: Partnering for Critical Infrastructure Security and Resilience," [http://www.dhs.gov/sites/default/files/publications/NIPP%202013\\_Partnering%20for%20Critical%20Infrastructure%20Security%20and%20Resilience\\_508\\_0.pdf](http://www.dhs.gov/sites/default/files/publications/NIPP%202013_Partnering%20for%20Critical%20Infrastructure%20Security%20and%20Resilience_508_0.pdf).

25. David Sandalow, "Hurricane Sandy and Our Energy Infrastructure," remarks delivered at the Columbia University Energy Symposium (Washington, DC: U.S. Department of Energy, 2012), <http://energy.gov/articles/hurricane-sandy-and-our-energy-infrastructure>.

responders as well as the average citizen's ability to refuel his or her automobile. Damage to critical infrastructure often slows the response and recovery process and imposes steep economic costs to industries and communities. An inability to quickly and effectively recuperate from such impacts can lead to irrecoverable losses.

### *Small Businesses*

Due to the impact of natural disasters on functionality and profit, some businesses prove unable to bear the costs, and ultimately, they fail to recover. Small businesses suffer disproportionately from natural disasters because of their concentration of assets and supplies, loss of staff and customer base, insufficient insurance coverage, and a lack of participation in risk-mitigation programs.<sup>26</sup> According to a 2010 National Federation of Independent Businesses study, 30 percent of small businesses close permanently following a presidentially declared disaster.<sup>27</sup> This fact is particularly daunting, considering that the economies of many communities rely heavily on small businesses. The failure of small businesses in the wake of a disaster can have a devastating impact on a community's economic drive, greatly diminishing resilience.

### *Health*

Natural disasters place immense pressure on health care and public health industries. Beyond the immediate injuries they create, they can intensify the potential for the spread of disease from overcrowding and contaminated sources of nutrition. Clean water, safe sanitation facilities, adequate shelter, and basic health care services are essential to prevent further injury and to avert the potential development and spread of communicable diseases.<sup>28</sup> Since disasters can often displace many individuals and families, the assurance of these services is vital for the health and stability of affected populations.

In addition to health effects of injury and disease, disasters can also exacerbate behavioral/mental health issues. These issues include, but are not limited to, anxiety, depression, and post-traumatic stress disorder (PTSD).<sup>29</sup> The resolution of these problems often requires the help of mental health professionals. Yet after Hurricane Ike in 2008, one study found that although 40 percent of the affected population reported mental health service

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26. UNISDR, "Small Businesses: Impact of Disasters and Building Resilience" (Geneva: UN Development Programme, Crisis Prevention and Recovery, 2013), 5–8, <http://www.preventionweb.net/english/hyogo/gar/2013/en/bgdocs/UNDP,%202013.pdf>.

27. Albert Sligh, Jr., "Written Statement of Associate Administrator Albert Sligh, Jr., Federal Emergency Management Agency, before the Senate Committee on Small Business and Entrepreneurship, 'Disaster Recovery: Evaluating the Role of America's Small Business in Rebuilding Their Communities'" (Washington, DC: FEMA, 2011), [www.dhs.gov/news/2011/09/29/written-testimony-associate-fema-senate-committee-small-business-and](http://www.dhs.gov/news/2011/09/29/written-testimony-associate-fema-senate-committee-small-business-and).

28. John T. Watson, Michelle Gayer, and Maire A. Connolly, "Epidemics after Natural Disasters," *Emerging Infectious Diseases* 13, no. 1 (January 2007): 4. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2725828/pdf/06-0779.pdf>.

29. National Center for PTSD, "Mental Health Effects following Disaster: Risk and Resilience Factors," last updated November 4, 2013, <http://www.ptsd.va.gov/professional/pages/effects-disasters-mental-health.asp>.

need, only about one third of those obtained service.<sup>30</sup> Ensuring sufficient mental health capacity and responsiveness is likely to remain a significant concern in many communities.

## Key Stakeholders

Preparing for and responding to disasters requires not only a “whole of government” approach that coordinates federal organizations and agencies, but a “whole of community” approach that involves all levels of government as well as the private sector.<sup>31</sup> The involvement of federal executive branch authorities, Congress, and the private sector, along with state and local partners, can help communities withstand the devastating impact of natural disasters. However, the interplay of these actors can create complex and sometimes counterproductive efforts for community resilience. Each major “player” has its own structure, methods of operation, and goals. Effective preparation, response, and recovery warrant fluid communication, cooperation, and support within and among entities. The following sections offer brief descriptions of each of the major players examined for this report.

### EXECUTIVE BRANCH AUTHORITIES

The preparation and response efforts for natural disasters depend on the size and scope of the threat. Local governments and first responders provide the frontline defense for most disasters. States, through their emergency management agencies, routinely support local response efforts with additional resources. Each state has unique standard operating procedures, but if a disaster causes, or is foreseen to cause, sufficient damage and destruction, governors have the ability to request federal assistance. With the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (hereafter referred to as the Stafford Act; P.L. 93-288), which was signed into law on November 23, 1989, the president may declare an emergency or major disaster for the designated states, municipalities, and tribal territories to provide the requested federal resources for response and recovery.<sup>32</sup>

The Federal Emergency Management Agency (FEMA), a DHS component, administers the majority of federal disaster relief efforts.<sup>33</sup> Communication between the states and the federal government for disaster declarations travels through FEMA’s ten regional offices across the United States. FEMA also administers federal grants for states, urban areas, and tribal lands to improve their capability to prepare for and mitigate against disasters.

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30. Sandro Galea, “Stigma and Barriers to Care: Caring for Those Exposed to War, Disaster, and Terrorism—Conference Report” (Bethesda, MD: Center for the Study of Traumatic Stress, 2011), 32–33, [http://www.cstsonline.org/wp-content/resources/CSTS\\_report\\_stigma\\_2012.pdf](http://www.cstsonline.org/wp-content/resources/CSTS_report_stigma_2012.pdf).

31. FEMA, “Whole Community,” last updated July 24, 2014, <http://www.fema.gov/whole-community>.

32. Francis X. McCarthy, “Federal Stafford Act Disaster Assistance: Presidential Declarations, Eligible Activities, and Funding,” Congressional Research Service, June 7, 2011, 1–2, <https://www.fas.org/sgp/crs/homesecc/RL33053.pdf>.

33. *Ibid.*, Summary.

**Table 2.1. Federal Executive Branch Disaster Relief Functions**

<i>Department/Agency</i>	<i>Functions</i>
Army Corps of Engineers (USACE)	<ul style="list-style-type: none"><li>▪ Flood control</li><li>▪ Construction projects (e.g., temporary roofs, generator installations, and debris removal)</li></ul>
Department of Agriculture (USDA)	<ul style="list-style-type: none"><li>▪ Low-interest emergency disaster loans for farmers, ranchers, and aquaculture producers</li><li>▪ Emergency food assistance, infrastructure, and economic programs</li></ul>
Department of Health and Human Services (HHS)	<ul style="list-style-type: none"><li>▪ Grants for social services</li><li>▪ Behavioral health treatment</li><li>▪ Safety and health training</li></ul>
Department of Housing and Urban Development (HUD)	<ul style="list-style-type: none"><li>▪ Grants for neighborhood revitalization, housing rehabilitation, and economic development</li></ul>
Department of Transportation (DOT)	<ul style="list-style-type: none"><li>▪ Services to:<ul style="list-style-type: none"><li>- Repair and rebuild transit assets and facilities</li><li>- Reopen roads and bridges</li><li>- Restore services at airports</li></ul></li></ul>
Federal Emergency Management Agency (FEMA)	<ul style="list-style-type: none"><li>▪ Individual and public assistance programs</li><li>▪ Hazard mitigation grants</li><li>▪ Community disaster loans</li><li>▪ Crisis counseling</li><li>▪ Flood insurance payments</li></ul>
Small Business Administration (SBA)	<ul style="list-style-type: none"><li>▪ Physical and economic injury disaster loans for small businesses</li><li>▪ Technical assistance and counseling</li></ul>

Sources: Bruce R. Lindsay and Jared Conrad Nagel, “Federal Disaster Assistance after Hurricanes Katrina, Rita, Wilma, Gustav, and Ike,” Congressional Research Service, July 5, 2013, 1–82, <https://www.hsdl.org/?view&did=741604>; Carolyn V. Torsell, “Federal Disaster Recovery Programs: Brief Summaries,” Congressional Research Service, August 10, 2012, 1–11, <https://www.fas.org/sgp/crs/homesecc/RL31734.pdf>.

Depending on the type of disaster and the capabilities required, there are several other federal departments and agencies that can provide assistance and support. These other entities can provide short and/or long-term relief through disaster-only or general assistance programs.<sup>34</sup> Table 2.1 lists some of the federal departments and agencies that provide disaster relief support to local communities.<sup>35</sup>

34. Carolyn V. Torsell, “Federal Disaster Recovery Programs: Brief Summaries,” Congressional Research Service, August 10, 2012, <https://www.fas.org/sgp/crs/homesecc/RL31734.pdf>.

35. Table 2.1 is not a comprehensive list of all federal departments and agencies involved with disaster relief. The National Guard also plays a large role in disaster relief but principally operates under state control in Title 32 status.

## **The Stafford Act**

The Stafford Act authorizes federal assistance to supplement state and local relief efforts. Before the president can make federal assistance available, a gubernatorial request and a subsequent presidential declaration for such assistance must be made.

The scope of the law has greatly expanded since its inception. Amendments over the past 40 years have increased administrative requirements, expanded available assistance and eligibility, and improved coordination with other federal agencies.

See McCarthy, “Federal Stafford Act Disaster Assistance,” 2–6.

## **LEGISLATIVE BRANCH AUTHORITIES**

By providing for vital public debate on ways in which the nation approaches natural disasters and by demonstrating resolve and commitment to addressing gaps and challenges in recovery and resilience through legislative action, Congress can play a remarkable role in fostering resilience. Congress authorizes and oversees the departments and agencies in charge of disaster relief. The Stafford Act represents the flagship legislation for disaster response. In addition to authorizing presidential disaster declarations, it provides the architecture for the assistance programs and funding criteria for each type of declaration. Since its original conception as the 1974 Disaster Relief Act, gaps and shortfalls revealed by major catastrophes have led to amendments through subsequent legislation, including, most recently, the Post-Katrina Emergency Management Reform Act of 2006 (PKEMRA; P.L. 109-295) and the Sandy Recovery Improvement Act of 2013 (SRIA; part of the Disaster Relief Appropriations Act, 2013).<sup>36</sup>

Congress also appropriates the requisite funding for the Disaster Relief Fund (DRF), from which the vast majority of all federal disaster assistance is drawn.<sup>37</sup> Furthermore, it sets the maximum monetary liability level for private companies involved in certain man-made disasters through such legislation as the Oil Pollution Act of 1990 (OPA 90; P.L. 101-380). Additionally, it oversees disaster management through numerous committees and subcommittees and holds hearings to determine the effectiveness of different executive branch programs.

## **PRIVATE SECTOR**

Although executive and legislative branch actions are vital, a “whole of community” approach to improving resilience also requires active participation from the private sector. Businesses, NGOs, and philanthropic organizations all help remove some of the pressure

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36. McCarthy, “Federal Stafford Act Disaster Assistance,” 2–3.

37. *Ibid.*, Summary.

from the public sector while contributing unique resources and capabilities that can serve to supplement and support government efforts. For example, Walmart maintains nine disaster distribution centers across the country and utilizes its sophisticated supply chain to restock stores in affected communities with crucial supplies during and after a disaster.<sup>38</sup> In addition to making charitable donations and volunteering services to affected communities, nonprofit organizations can help coordinate response and recovery efforts. The Center for Disaster Philanthropy (CDP), for instance, works to coordinate donor efforts and direct charitable resources.<sup>39</sup> Additionally, companies and organizations form PPPs with different levels of government in order to ensure coordinated management of communications and resource deployment throughout the emergency management cycle.<sup>40</sup> The American Red Cross (Red Cross) and Volunteer Organizations Active in Disasters (VOAD) represent private organizations explicitly mentioned in DHS's strategic and operational documents.<sup>41</sup> These partnerships are key to quickly closing the needs-capabilities gap after a disaster by avoiding bureaucratic hurdles that can slow the response.

Given the growing frequency and cost of disasters, the United States should take steps now to enhance the nation's disaster resilience. By emphasizing planning, partnerships, and capabilities development, the United States can mitigate some of the effects and costs of natural disasters.<sup>42</sup> Meaningful progress will require reform at several levels, including but not limited to changes to federal executive branch policy, legislative action by the U.S. Congress, and closer partnerships and cooperation between the public and private sectors.

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38. Walmart, "Walmart Logistics," <http://corporate.walmart.com/our-story/our-business/logistics>.

39. Center for Disaster Philanthropy (CDP), "Services," <http://disasterphilanthropy.org/what-we-provide/>.

40. Ibid.

41. DHS, "National Response Framework," May 2013, [http://www.fema.gov/media-library-data/20130726-1914-25045-1246/final\\_national\\_response\\_framework\\_20130501.pdf](http://www.fema.gov/media-library-data/20130726-1914-25045-1246/final_national_response_framework_20130501.pdf).

42. Weiss and Weidman, "Disastrous Spending."

# 3 | Executive Branch Actions

Given the central role played by FEMA and other federal agencies, it is clear that ensuring efficient and effective executive branch policy and programs is critical for improving domestic disaster resilience. Most, if not all, relevant executive branch agencies have revised their disaster policies in recent years, reflecting in large part important lessons learned from major catastrophes such as Hurricane Katrina and Hurricane Sandy. While these reform efforts have streamlined many processes and helped communities better prepare for future disasters, additional efforts and initiatives are warranted.

## Data and Information: Collection, Analysis, and Distribution

Through authorization in key disaster legislation, congressionally funded resources, and presidential directives, federal agencies organize and execute numerous emergency management programs, from the national to the community level. Agencies must constantly assess the efficiencies and effectiveness of these programs in order to measure levels of preparedness and resilience. Assessments take many forms, including annual preparedness evaluations and after-action reports (AARs) from exercises and actual disasters. The risk, vulnerability, and capability factors analyzed in these assessments can influence federal grant funding, the development of general and incident-specific contingency plans, and the information shared with other jurisdictions and the private sector.

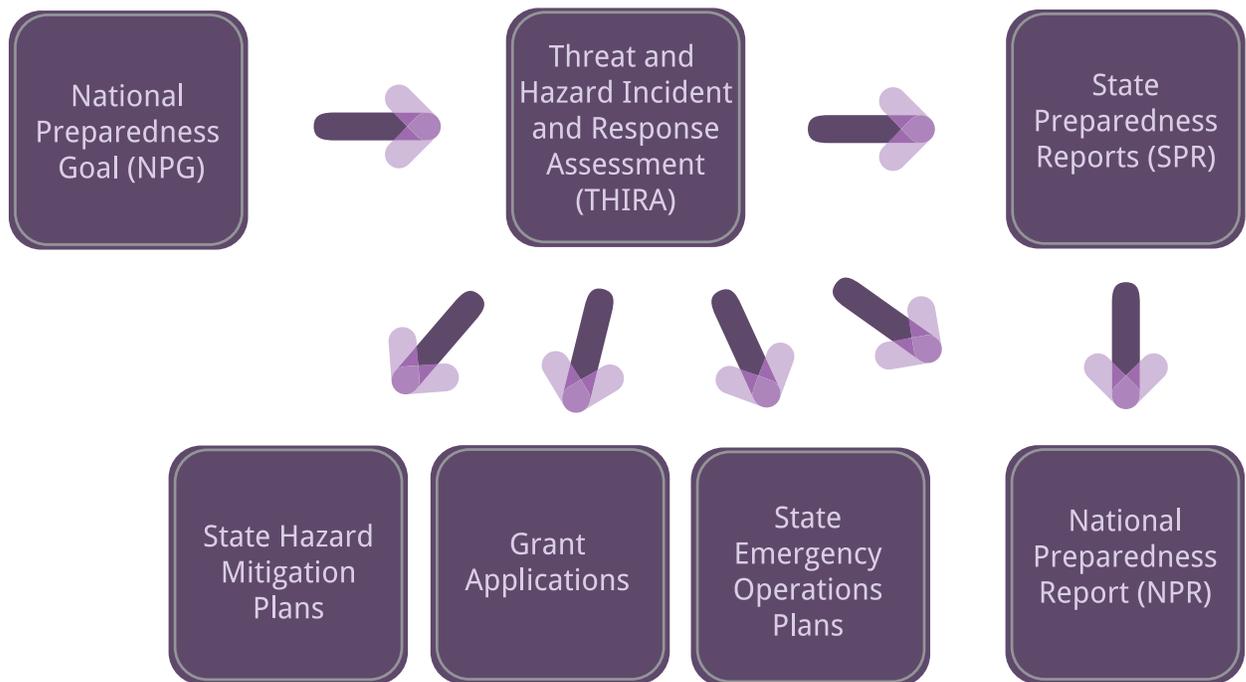
At the national level, Presidential Policy Directive 8: National Preparedness (PPD-8) guides efforts to improve collection, analysis, and distribution of disaster resilience data and information. This directive outlines requirements to formulate a national preparedness goal (NPG), a system to implement the goal, frameworks for each mission area, federal interagency operation plans, and public training and awareness efforts that support an all-hazards, all-of-nation approach to disasters.<sup>1</sup> DHS subsequently published the first edition of the NPG, which identifies 31 core capabilities across five mission areas and establishes strategic-level targets or performance thresholds for each one.<sup>2</sup> The national preparedness system works to achieve the NPG through different resources that help

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1. Obama, “PPD-8.”

2. DHS, “National Preparedness Goal,” 1.

**Figure 3.1. Documents for Identifying and Assessing Disaster Risk and Preparedness**



communities to identify and assess risk and to estimate, build, and improve capabilities.<sup>3</sup> The results of risk assessments, as illustrated in Figure 3.1, directly affect how communities improve and validate their capabilities. Communities seeking federal emergency management and homeland security grants must complete a Threat and Hazard Identification and Risk Assessment (THIRA) in order to be considered for these funds. The end result of the system, before initiating a reassessment, is a set of State Preparedness Reports and a National Preparedness Report, which assesses the nation’s progress toward meeting the targets for each core capability in the NPG.<sup>4</sup>

**FINDING #1: DHS HAS NOT DEVELOPED STANDARD, QUANTIFIABLE READINESS AND PERFORMANCE METRICS FOR STATE AND LOCAL GOVERNMENTS TO IDENTIFY GAPS AND ASSESS NEEDS FOR DISASTER PREPAREDNESS AND RESILIENCE.**

While the NPG’s strategic-level capability targets and the THIRA guide’s recommended impact variables establish a basic framework of understanding, DHS has not developed standard metrics for jurisdictions to measure their capability levels. Although each jurisdiction has unique needs based on its location, population, and infrastructure, a standard set of quantifiable variables and target levels would help states assess relative

3. DHS, “National Preparedness System,” November 2011, 1, [http://www.fema.gov/pdf/prepared/nps\\_description.pdf](http://www.fema.gov/pdf/prepared/nps_description.pdf).

4. DHS, “National Preparedness Report,” March 30, 2014, 1, [http://www.fema.gov/media-library-data/1409688068371-d71247cabc52a55de78305a4462d0e1a/2014%20NPR\\_FINAL\\_082914\\_508v11.pdf](http://www.fema.gov/media-library-data/1409688068371-d71247cabc52a55de78305a4462d0e1a/2014%20NPR_FINAL_082914_508v11.pdf).

preparedness to similar jurisdictions across the nation. The current THIRA guide fosters a self-determined assessment of national preparedness, which obfuscates the opportunity for objective, interstate comparisons.<sup>5</sup> To date, DHS has proven unable to meet the requirements of PPD-8 to identify “clear, measurable, and prioritized” capability targets and measure readiness against those targets with “clear, objective, and quantifiable” performance metrics.<sup>6</sup> Furthermore, Congress has reduced FEMA’s grant funding from its requested level over the past few years, due in part to the inability to demonstrate the effectiveness of grants in enhancing preparedness.<sup>7</sup> Some have called for the development of a national preparedness assessment, separate from the NPG and National Preparedness Report, to identify clear capability requirements, measurements, and gaps.<sup>8</sup> However, adding another document requirement without recommending a method to identify metrics will likely only complicate the system.

One method for preparing metrics might be to first standardize existing impact measurements. DHS measures potential consequences with six distinct variables<sup>9</sup> in its Strategic National Risk Assessment, which identifies potential threats and hazards to the United States.<sup>10</sup> Additionally, the THIRA guide recommends eight similar impact measurements for jurisdictions to weigh risk and vulnerability. DHS should reconcile the differences in order to standardize the measurements. Once DHS standardizes a set of measurable consequences, it can develop metrics for core capabilities with the goal of reducing the impact of disasters.

DHS can increase efficiency and productivity in determining the capability metrics by leveraging other sources—different elements of DHS, the interagency, and the private sector, for instance—that have more expertise than FEMA in certain sectors. For example, the Centers for Disease Control and Prevention, in coordination with the Robert Wood Johnson Foundation, developed the National Health Security Preparedness Index, which quantitatively measures a number of health-preparedness variables across states.<sup>11</sup> Since many of the measurements coincide with the health-related core capabilities in the NPG (e.g., public health and medical services), DHS could use the index as a model to establish the metrics for those capabilities.

Once impact variables and capability metrics are established, DHS can create scalable target levels for jurisdictions to compare relative preparedness and resilience levels across similar incidents and jurisdictions. The standardization of metrics for exercises and

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5. David C. Maurer, “National Preparedness: FEMA Has Made Progress, but Additional Steps Are Needed to Improve Grant Management and Assess Capabilities,” GAO-13-637T (Washington, DC: U.S. Government Accountability Office, June 25, 2013), 12, <http://www.gao.gov/assets/660/655392.pdf>.

6. Obama, “PPD-8.”

7. Maurer, “National Preparedness,” 9.

8. *Ibid.*, 5.

9. The variables include loss of life, injuries and illnesses, direct economic costs, social displacement, psychological distress, and environmental impact.

10. DHS, “The Strategic National Risk Assessment in Support of PPD-8: A Comprehensive Risk-Based Approach toward a Secure and Resilient Nation,” December 2011, <http://www.dhs.gov/xlibrary/assets/rma-strategic-national-risk-assessment-ppd8.pdf>.

11. Study participant, one-on-one, not-for-attribution interview, April 2014.

disasters in THIRAs and AARs will help jurisdictions measure relative success in closing the target-capability gap and more effectively cycle through each stage of the national preparedness system. This process can also help refine target levels unique to the destruction level of a threat/hazard and the size, location, and infrastructure and logistical capabilities of the jurisdiction. Furthermore, states and other jurisdictions can set priorities for grant requests and spending through the examination of their vulnerabilities in terms of the threats/hazards that pose the most risk to their communities.

## **FINDING #2: ROBUST ANALYSIS OF DISASTER PREPAREDNESS AND RESPONSE EFFORTS ACROSS DIFFERENT JURISDICTIONS DOES NOT EXIST.**

To distribute information among different stakeholders in emergency management, DHS and FEMA maintain a Lessons Learned Information Sharing (LLIS) database with individual pages on different man-made and natural threats/hazards as well as core capabilities.<sup>12</sup> However, this resource mainly provides access to third-party resources and a number of distinct AARs. Currently, only a limited number of analyses that synthesize data from multiple AARs exist in the database. The development of more trend analyses would enhance the database and effectively illustrate gaps and areas for improvement. In order for these analyses to provide a complete picture of national preparedness and response capabilities, more executive branch agencies need to conduct exercises, complete AARs on all exercises and disasters, and share the evaluations on LLIS. Access to a more robust dataset from all federal, state, and local partners will likely help jurisdictions make better evidence-based decisions through the examination of successes and failures in other places.<sup>13</sup> To help achieve that goal, FEMA should provide access to newly developed THIRAs and State Preparedness Reports on the database as well. By analyzing and comparing the standardized core capability and impact measurements from several sources, the LLIS database could guide executive branch policy and assessments across all levels of government and improve the preparedness of communities.

## **Funding: Cost Reduction and Hazard Mitigation**

Continued pressures on the federal budget will place a premium on efficient use of preparedness and recovery dollars, a reality acknowledged by FEMA administrator Craig Fugate.<sup>14</sup> Hazard mitigation offers just such an opportunity to create efficiencies by reducing recovery and response costs. Mitigation includes actions taken before a disaster strikes to reduce vulnerabilities for loss of life or property or the disruption of operations or functionality.<sup>15</sup> Installing storm shutters, elevating home levels, updating building codes, and installing backup generators are all examples of mitigation. Increasing public awareness

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12. DHS, "Lessons Learned Information Sharing (LLIS)," [www.llis.dhs.gov](http://www.llis.dhs.gov).

13. Study participant, one-on-one, not-for-attribution interview, May 2014.

14. Craig Fugate, "Written Testimony of Federal Emergency Management Agency Administrator Craig Fugate for Senate Committee on Appropriations, Subcommittee on Homeland Security hearing titled 'Rebuilding after Hurricane Sandy,'" March 1, 2013, [www.dhs.gov/news/2013/03/01/written-testimony-fema-administrator-craig-fugate-senate-committee-appropriations](http://www.dhs.gov/news/2013/03/01/written-testimony-fema-administrator-craig-fugate-senate-committee-appropriations).

15. FEMA, "What Is Mitigation?," last updated September 26, 2013, <http://www.fema.gov/what-mitigation#1>.

## Elevated Massachusetts homes following Hurricane Sandy.



Source: FEMA/Marilee Caliendo, photographer, “Peggotty Beach Homes Survive Another Storm,” October 30, 2012, <http://www.fema.gov/media-library/assets/images/65834>.

of the importance of disaster planning, including the effectiveness and cost-saving potential of hazard mitigation, can improve community resilience and reduce costs. The Multi-hazard Mitigation Council has determined that for every dollar spent on hazard mitigation, the nation reaps four dollars in future benefits.<sup>16</sup> This finding further underscores the need to establish hazard mitigation as a priority in achieving resilience. One expert noted that spending on mitigation measures is often unpopular, however, due to the perception that support will be fleeting and because of the lack of immediate reward to taxpayers or investors.<sup>17</sup>

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16. Multihazard Mitigation Council, “Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities: Volume 1—Findings, Conclusions, and Recommendations” (Washington, DC: National Institute of Building Sciences, 2005), 5, [http://c.ymcdn.com/sites/www.nibs.org/resource/resmgr/MMC/hms\\_vol1.pdf](http://c.ymcdn.com/sites/www.nibs.org/resource/resmgr/MMC/hms_vol1.pdf).

17. Study participant, one-on-one, not-for-attribution interview, April 2014.

### **FINDING #3: WHILE FEDERAL EXECUTIVE BRANCH AGENCIES HAVE RECENTLY ENHANCED THEIR FOCUS ON HAZARD MITIGATION, MITIGATION EFFORTS ARE STILL UNDERREPRESENTED IN THE DISTRIBUTION OF GRANT FUNDING.**

One of the primary tools used by the federal government to promote hazard mitigation is the National Flood Insurance Program (NFIP), which requires home and business owners to adopt certain building standards and floodplain management strategies in order to receive flood insurance.<sup>18</sup> FEMA has received additional authority through recent legislation to assess mitigation efforts in determining premium rates; such assessments are intended to persuade home and business owners to exceed standard requirements.<sup>19</sup> FEMA also provides annual grants through the Flood Mitigation Assistance (FMA) program to homes and businesses in order to reduce or eliminate NFIP claims through mitigation planning and projects.<sup>20</sup> As updated, risk-based flood mapping starts to increase premiums, FEMA should continue to prioritize and inform insurance recipients of the cost-saving and damage-reducing potential of flood mitigation.

Of the other two mitigation grant programs administered by FEMA, the Pre-Disaster Mitigation (PDM) program represents DHS's only purely preventative program for building infrastructure.<sup>21</sup> At \$25 million in FY 14 funds, the PDM program has been significantly smaller than grant programs for emergency management and homeland security.<sup>22</sup> These larger programs can be used by jurisdictions to acquire assets to prevent and protect against man-made disasters and increase response and recovery capabilities. However, the PDM program provides invaluable support for hardening building infrastructure *before* a disaster strikes, which helps prevent loss of life and property and aids continuity of business operations. In President Obama's FY 15 budget request, the Opportunity, Growth, and Security Initiative includes \$400 million for the PDM program, a 1,500 percent increase over the current funding level.<sup>23</sup> This proposed increase is accompanied by a broadening in the scope of PDM funding to include "climate adaptation" projects.<sup>24</sup> It will be critical to

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18. U.S. Government Accountability Office (GAO), "Flood Insurance: Strategies for Increasing Private Sector Involvement," GAO-14-127 (Washington, DC: January 2014), 4, <http://www.gao.gov/assets/670/660309.pdf>.

19. Homeowner Flood Insurance Affordability Act of 2014, Public Law No: 113-89, 128 STAT. 1026 (2014).

20. FEMA, *Hazard Mitigation Assistance Unified Guidance* (Washington, DC: DHS, July 12, 2013), 3, [http://www.fema.gov/media-library-data/1381842520166-4d0b88314cfaa2b7e114391ce6ff2d73/508\\_FINAL\\_Guidance\\_09112013.pdf](http://www.fema.gov/media-library-data/1381842520166-4d0b88314cfaa2b7e114391ce6ff2d73/508_FINAL_Guidance_09112013.pdf).

21. The other program, the Flood Mitigation Assistance (FMA) grant program, focuses primarily on repetitive loss buildings and structures. FEMA, "FY 2014 Flood Mitigation Assistance (FMA) Grant Program Fact Sheet," May 9, 2014, 1, <http://www.mass.gov/eopss/docs/mema/mitigation/fy14-fma-fact-sheet-final-4-3-14-final.pdf>.

22. By comparison, in FY 2014, the Emergency Management Performance Grants (EMPG) program was funded at approximately \$350 million and the Homeland Security Grant Program (HSGP) at \$1.2 billion. DHS, *Congressional Budget Justification FY 2015*, 10, <http://www.dhs.gov/sites/default/files/publications/DHS-Congressional-Budget-Justification-FY2015.pdf>.

23. DHS, "Budget-in-Brief: Fiscal Year 2015," 131, <http://www.dhs.gov/sites/default/files/publications/FY15BIB.pdf>.

24. David Miller, "The Role of Mitigation in Reducing Federal Expenditures for Disaster Response," statement before Senate Homeland Security and Government Affairs, Subcommittee on Emergency Management, Intergovernmental Relations, and the District of Columbia, May 14, 2014, <http://www.hsgac.senate.gov/subcommittees/emdc/hearings/the-role-of-mitigation-in-reducing-federal-expenditures-for-disaster-response>.

ensure this broadening helps rather than hinders community investment in infrastructure improvements aimed at decreasing the cost of future natural disasters.

There are many other opportunities for DHS and other federal agencies to promote cost savings through mitigation investment. For example, the Hazard Mitigation Grant Program (HMGP), although *ex post facto* in nature, provides assistance for enhancing building infrastructure to eligible jurisdictions and private nonprofit organizations after a presidentially declared major disaster.<sup>25</sup> However, this program only received about 4 percent of all funding for federally declared disasters from FYs 2004–2011 and is expected to only account for just 2 percent of Hurricane Sandy spending through FY 2014.<sup>26</sup> The Department of Housing and Urban Development’s Community Development Block Grant (HUD’s CDBG) provides about \$3 billion annually for housing and economic development and disaster recovery assistance to low- and moderate-income communities.<sup>27</sup> For the additional \$5.4 billion appropriated for Hurricane Sandy recovery efforts, HUD has outlined minimum mitigation requirements for applicants.<sup>28</sup> However, HUD could improve the cost-saving effects of the program by making mitigation a more important factor in the allocation of all CDBG funds.

DHS and other agencies should reexamine their priorities for resource and fund allocation in an effort to promote mitigation efforts. Such an examination will require the development and prioritization of long-term goals and cost considerations. To create such a strategy, agencies can learn from the risks and vulnerabilities revealed through the THIRA and AAR processes. Additionally, DHS can utilize knowledge gained from the Quadrennial Homeland Security Review (QHSR) process to align “programs, assets, capabilities, budget, policies, and authorities of the Department.”<sup>29</sup> Focusing on risk mitigation as part of a long-term strategy could reduce costs and increase community resilience.

## Waivers and Credentialing

### **FINDING #4: FEDERAL EXECUTIVE BRANCH AGENCIES HAVE NOT DEVELOPED A CLEAR FRAMEWORK FOR WAIVING REGULATORY AND OTHER REQUIREMENTS BEFORE, DURING, AND AFTER DISASTERS.**

Among the most important authorities of executive branch agencies—especially immediately before and after a disaster—is the waiver or suspension of certain conditions for the

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25. *Ibid.*, 1.

26. Staff of the GAO, “Federal Disaster Assistance: Improved Criteria Needed to Assess a Jurisdiction’s Capability to Respond and Recover on Its Own,” GAO-12-838 (Washington, DC: September 2012), <http://www.gao.gov/assets/650/648162.pdf>.

27. U.S. Department of Housing and Urban Development (HUD), “Community Planning and Development: Community Development Fund—2015 Summary Statement and Initiatives,” [http://portal.hud.gov/hudportal/documents/huddoc?id=fy15cj\\_comm\\_dvlpt\\_fnd.pdf](http://portal.hud.gov/hudportal/documents/huddoc?id=fy15cj_comm_dvlpt_fnd.pdf).

28. HUD, “Clarifying Guidance, Waivers, and Alternative Requirements for Hurricane Sandy Grantees in Receipt of Community Development Block Grant Disaster Recovery Funds,” *Federal Register* 78, no. 76 (April 19, 2014): 23578–23581, <https://www.federalregister.gov/articles/2013/04/19/2013-09228/clarifying-guidance-waivers-and-alternative-requirements-for-hurricane-sandy-grantees-in-receipt-of#h-10>.

29. Quadrennial Homeland Security Review, 6 U.S.C. § 347 (2011), [www.gpo.gov/fdsys/pkg/USCODE-2011-title6/html/USCODE-2011-title6-chap1-subchapVII-sec347.htm](http://www.gpo.gov/fdsys/pkg/USCODE-2011-title6/html/USCODE-2011-title6-chap1-subchapVII-sec347.htm).

administration of assistance programs. Depending on the authority designated in the statute, the president, Congress, or the administrator of the federal agency can waive specific regulatory requirements or extend deadlines on certain reports or applications.<sup>30</sup> For example, after both Hurricane Katrina and Hurricane Sandy, federal agencies waived several regulatory and other restrictions, including the transportation of petroleum by non-U.S. vessels between U.S. ports, fuel standards, low-income housing tax credits, filing deadlines, and trucker hours.<sup>31</sup> While the federal executive branch and Congress have the authority to independently suspend or modify the majority of requirements available for waivers, some require requests by states and municipalities. Under the Stafford Act, federal agencies can only waive or modify administrative conditions that prevent the provision of federal assistance programs if state or local authorities request such waivers or modifications.<sup>32</sup> However, jurisdictions are often unaware of the assistance programs that require waiver requests. Furthermore, jurisdictions have indicated a lack of knowledge over the specific conditions for the implementation of waivers.<sup>33</sup> This lack of awareness stems from their ad hoc nature. Developing a clear framework for the modification or suspension of regulatory and other requirements—a framework that includes thresholds for enactment of general and incident-specific waivers, the need for a request, and any limitations or exceptions (e.g., duration)—could better inform jurisdictions of the specific conditions associated with each potential waiver. With such a source to provide awareness for planning for waivers and preparing requests, jurisdictions could improve their readiness in advance of disasters or immediately following no-notice events and reduce barriers to response and recovery.

#### **FINDING #5: STATE AND LOCAL GOVERNMENTS' WAIVER AND CREDENTIALING POLICIES REQUIRE MORE FLEXIBILITY FOR ESSENTIAL RESPONSE MISSIONS. MISSION ASSIGNMENTS AMONG ALL EXECUTIVE BRANCH AGENCIES MAY ALSO BENEFIT FROM FLEXIBILITY.**

In addition to waivers for certain federal statutes and regulations, states and other jurisdictions may need to waive their own guidelines to expedite delivery of supplies and services across borders. For instance, each state's transportation department sets unique weight limits for vehicles. States may be reticent to waive these limits due to the liability from any potential accidents.<sup>34</sup> While calculating limits based on risk and vulnerability remains important to ensuring safety, states can transfer a degree of risk to the federal level through available assistance. The knowledge that the federal government would cover 75 percent of the liability may help ease burdensome restrictions and permit quicker flows of supplies.<sup>35</sup>

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30. Curtis W. Copeland, "Regulatory Waivers and Extensions Pursuant to Hurricane Katrina," CRS Report for Congress, September 13, 2005, 1, [www.au.af.mil/au/awc/awcgate/crs/rs22253.pdf](http://www.au.af.mil/au/awc/awcgate/crs/rs22253.pdf).

31. *Ibid.*, 2–6; FEMA, "Hurricane Sandy: Timeline," last updated October 28, 2013, <http://www.fema.gov/hurricane-sandy-timeline>.

32. Stafford Act, Title III, § 301.

33. Study participant, one-on-one, not-for-attribution interview, April 2014.

34. Study participant, one-on-one, not-for-attribution interview, April 2014.

35. Study participant, one-on-one, not-for-attribution interview, May 2014.

Jurisdictions also often need support from professionals in certain industries that require licenses or credentials to perform tasks, such as delivering medical services or restoring power. However, these incident managers and emergency responders invariably hold separate licenses and credentials depending on their jurisdiction of origin. For instance, emergency medical service personnel from Georgia attempting to support hurricane response in Florida may not possess the required credentials to perform medical service in Florida. Federal employees and contractors have specific processing standards for personal identity verification, but state, local, and private-sector employees must often rely on other mechanisms of authentication.<sup>36</sup> FEMA maintains a guide that outlines the process for each state to approve credentials for assistance provided through the Emergency Management Assistance Compact (EMAC), a mutual aid agreement among all U.S. states and territories for the sharing of resources in the wake of disasters.<sup>37</sup> However, waiting on credential processing may hinder relief efforts. States can increase response time and services delivered through EMAC by developing memorandums of understanding (MOUs) that allow temporary credential approval for essential missions.

Before interagency or interstate support efforts can begin, the supporting agencies or personnel also require written mission orders or assignments from the lead agency. A Hurricane Sandy AAR found that 40 percent of federal mission assignments took longer than 24 hours to process, which prevented the execution of crucial tasks.<sup>38</sup> In some instances, when supporting agencies proved willing, FEMA utilized pre-scripted and verbal mission assignments to lessen the impact of these delays.<sup>39</sup> The use of these alternative forms of mission assignments can help improve the efficiency and effectiveness of interagency and interstate support in disaster response and help prevent further loss of life and property in affected communities.

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36. DHS, “National Incident Management System: Guideline for the Credentialing of Personnel,” August 2011, [http://www.fema.gov/pdf/emergency/nims/nims\\_cred\\_guidelines\\_report.pdf](http://www.fema.gov/pdf/emergency/nims/nims_cred_guidelines_report.pdf).

37. *Ibid.*, 17.

38. FEMA, “Hurricane Sandy FEMA After-Action Report,” July 1, 2013, 11, <https://www.llis.dhs.gov/sites/default/files/Sandy%20FEMA%20AAR.pdf>.

39. *Ibid.*, 12.

# 4 | Congressional Actions

Congress can play an active role in shaping and reforming the nation’s approach to disaster resilience through drafting, amending, and overseeing disaster legislation and programs. It can aggregate the needs of different communities and direct policy (and appropriations) to meet those needs. Many members of Congress have a deep interest in the development and execution of disaster policy and programs for the benefit of their constituents, both individuals and businesses. However, meaningful changes to disaster legislation can often require significant time, effort, and political capital on behalf of a congressional member, and such initiatives frequently compete with other goals and priorities of individual members and committees. Given these constraints, when considering disaster legislation, it is important to examine carefully the effectiveness of current law, the ability for legislative modifications to improve disaster resilience, and the potential net effects of changes.

## Legislative Modifications

### **FINDING #6: MOST SIGNIFICANT CHANGES TO DISASTER LEGISLATION OCCUR AFTER A LARGE-SCALE DOMESTIC CATASTROPHE.**

The most recent large-scale disaster reform effort occurred after Hurricane Katrina. The findings of the subsequent investigative bipartisan committee led to PKEMRA, which resulted in considerable changes to the federal system of emergency management. Several years later, Congress responded to Hurricane Sandy by authorizing additional improvements to the federal disaster response. The timing of these reforms reflects the reactive nature of legislation in this issue set. Members of Congress have many competing priorities, often guided by current events and constituent pressures. Therefore, major reform efforts are unlikely to result in meaningful legislative reform without a disaster or other major forcing event.<sup>1</sup>

That said, several key members of Congress, such as senators Mary Landrieu and David Vitter of Louisiana, frequently press for disaster management reform. Often representing communities that have already experienced—or are at higher risk for—natural disasters, these members and their staffs work to make relevant changes to legislation even without a major catastrophe trigger, reassessing reform effectiveness and providing “tweaks” in legislation to reflect specific lessons learned. For example, Senator Landrieu sponsored a provision in the 2013 Department of Homeland Security Appropriations Act to alter the

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1. Study participant, one-on-one, not-for-attribution interview, April 2014.

**Senator John Cornyn of Texas (left) distributes water to residents affected by wildfires.**



Source: FEMA/Patsy Lynch, photographer, “FEMA Continues to Support Survivors of the Texas Wildfires,” September 16, 2011, <http://www.fema.gov/media-library/assets/images/62007>.

formula for calculating the forgiveness of disaster loans from the SBA.<sup>2</sup> Although this provision sought to provide relief for communities still struggling to repay loans from Hurricane Katrina, the adjustment will help future communities that may be affected by such extreme destruction. The continued efforts of these members and their staffs can focus the legislative branch on targeted improvements and provide oversight functions to help prevent the need for massive “overhaul” changes after the next major catastrophe.

**FINDING #7: WHILE PKEMRA ADDRESSED THE NEED FOR INTEGRATION AND INTEROPERABILITY, RECENT LEGISLATIVE CHANGES—SUCH AS THOSE IN SRIA—HAVE FOCUSED ON INCREASING MANAGEMENT, EFFICIENCY, AND FLEXIBILITY IN DISASTER PREPAREDNESS AND RESPONSE.**

In 2006, PKEMRA adjusted the structure of FEMA, redefined the federal role in supporting state and local governments, and allocated additional authorities and responsibilities to

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2. Senator Mary Landrieu, “Landrieu Announces Over \$5.6 Million in Disaster Loans Forgiven for Lafourche, Washington Parishes,” press release, March 5, 2014, [http://www.landrieu.senate.gov/?p=press\\_release&id=4264](http://www.landrieu.senate.gov/?p=press_release&id=4264).

other federal agencies; it also resulted in significant amendments to the Stafford Act and the Homeland Security Act of 2002 (P.L. 107-296).<sup>3</sup> The changes reflected the shift to greater interagency and intergovernmental communication, interoperability, and reliance increasingly emphasized after the September 11, 2001 terrorist attacks.<sup>4</sup> In addition, a major focus of PKEMRA was to establish a unified national system for preparedness, incident management, response, and recovery.<sup>5</sup>

As government agencies began implementing these changes, and as subsequent disasters tested their effectiveness, additional management and efficiency gaps came to light. SRIA attempted to address some of these emergent gaps by outlining targeted legislative changes, including disaster declarations for tribal governments and pilot programs for FEMA’s HMGP, dispute resolution, and public assistance alternative procedures.<sup>6</sup> As the relevant departments and agencies implement and evaluate the authorized changes, Congress can, through its oversight role, determine whether the modifications have actually achieved the intended goals. For example, if public assistance pilot programs prove effective in saving time and costs while measurably fulfilling the requirements of the assigned mission, then legislators could consider authorizing their permanent use.

Such tweaks to individual programs or management procedures often appeal to a majority of congressional members, provided that the changes reduce costs, improve efficiency, and do not adversely affect their constituents.<sup>7</sup> However, tensions arise when reform efforts offer structural alterations that may potentially increase costs for disaster management. One such recommended change involves the addition of “catastrophic disasters” as a third category for presidential declarations. Some argue that “major disasters,” the larger of the two current categories, does not authorize sufficient funding and expediency for the response required by such devastating disasters as 9/11 or Hurricane Katrina.<sup>8</sup> Advocates of this reform believe that predetermining increases in federal cost shares and grant and loan caps as well as simplified procedures for distributing funds and resources will enable the federal government to more expeditiously assist states and municipalities with response efforts.<sup>9</sup> Opponents maintain that such a designation could overburden the federal government and disincentivize states to prepare sufficiently for catastrophes.<sup>10</sup>

While categorical designations can help make available forms of assistance easily identifiable, every disaster causes a unique amount of damage and requires different levels of aid. The underlying issue is how to provide sufficient flexibility and scalability in

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3. Post-Katrina Emergency Management Reform Act (PKEMRA) of 2006, Public Law No: 109-295, 120 STAT. 1394-1463 (2006).

4. Study participant, one-on-one, not-for-attribution interview, April 2014.

5. PKEMRA.

6. Sandy Recovery Improvement Act (SRIA) of 2013, Public Law No: 113-2, 127 STAT. 39-50 (2013).

7. Study participant, one-on-one, not-for-attribution interview, April 2014.

8. Bruce R. Lindsay and Francis X. McCarthy, “Consideration for a Catastrophic Declaration: Issues and Analysis,” Congressional Research Service, July 6, 2011, 5, <https://www.fas.org/sgp/crs/homesec/R41884.pdf>.

9. *Ibid.*, 17.

10. *Ibid.*

federal response efforts that conform to the size and effect of the disaster. The Stafford Act, as amended by PKEMRA and SRIA, provides flexibility for assistance through presidential discretion for: increasing spending caps and cost shares; expediting grant determination and delivery procedures; and allowing for in-lieu-of contributions for irrecoverable damage.<sup>11</sup> Additionally, governors can request declarations before a forecast catastrophe causes damage, as in the case of Hurricane Sandy, which allows for the pre-positioning of resources and use of mitigation funds to reach affected areas without the normal requirement of a preliminary damage assessment.<sup>12</sup>

The focus on flexibility allows the federal government to provide the necessary amount of relief based upon preestablished metrics. However, some metrics, such as the weight of factors for determining public and individual assistance, still need to be addressed. For example, as of this writing, FEMA had not yet revised its individual assistance declaration factors, a requirement of SRIA.<sup>13</sup> Since Congress authorized the change, it can use its oversight role to ensure the new factors provide a reasonable measurement of the effect of disasters on individual households. Furthermore, this approach allows Congress to promote a holistic model of resilience by requiring states and municipalities to meet certain criteria that trigger increased funding and expedited delivery of services. For instance, states must develop preapproved debris removal and hazard mitigation plans in order to receive enhanced assistance.<sup>14</sup> This approach helps ensure cohesion in preparedness at all levels of government.

## Disaster Funding

### **FINDING #8: CONGRESS HAS ALREADY TAKEN SOME STEPS TO REDUCE THE FEDERAL SHARE OF DISASTER RELIEF FUNDING. HOWEVER, THERE MAY BE ADDITIONAL METHODS FOR AVOIDING FUTURE DISASTER COSTS.**

Although Congress has worked to increase efficiency and flexibility in disaster management and spending, the fact remains that the frequency and cost of disasters is rising exponentially.<sup>15</sup> Additionally, given the pressure to reduce budgets, new approaches to spending are worth exploring. One area of concern is the federal share of covering losses after disasters. As mentioned earlier, Congress funds all federal disaster relief efforts authorized by the Stafford Act through the DRF. The DRF is a “no-year” account, which

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11. Jared T. Brown, Francis X. McCarthy, and Edward C. Liu, “Analysis of the Sandy Recovery Improvement Act of 2013,” Congressional Research Service, March 11, 2013, <https://www.fas.org/sgp/crs/misc/R42991.pdf>.

12. Craig Fugate, “One Year Later: Examining the Ongoing Recovery from Hurricane Sandy,” statement before the Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on Emergency Management, Intergovernmental Affairs and the District of Columbia, November 6, 2013, <http://www.hsgac.senate.gov/subcommittees/emdc/hearings/one-year-later-examining-the-ongoing-recovery-from-hurricane-sandy>.

13. FEMA, “Sandy Recovery Improvement Act (SRIA): Dashboard as of March 4, 2014,” 2, [http://www.fema.gov/media-library-data/1394046446758-34696cbb069e0eaf6d96ceef10ec57e0/SRIA+Dashboard+030414\\_508.pdf](http://www.fema.gov/media-library-data/1394046446758-34696cbb069e0eaf6d96ceef10ec57e0/SRIA+Dashboard+030414_508.pdf).

14. Brown, McCarthy, and Liu, “Analysis of the SRIA,” 13; *Ibid.*, 18.

15. See Chapter 2.

allows it to carry over funds for response and recovery activities each year.<sup>16</sup> The executive branch determines the budget request by calculating the 10-year average of disaster costs, excluding incidents costing over \$500 million, and accounting for rollover funds, pending recovery costs, and estimated recoveries of unobligated funds.<sup>17</sup> Historically, this method of budgeting has been insufficient to meet the federal costs following disasters. Shortfalls forced Congress to pass supplemental appropriations for disaster relief in 17 of the 22 fiscal years between 1989 and 2010.<sup>18</sup> The Budget Control Act of 2011 (BCA; P.L. 112-25) attempted to limit the overruns of the DRF by creating a cap on a newly designated “disaster relief” funding category.<sup>19</sup> However, the BCA maintained the unlimited cap on “emergency” spending, previously used for all disaster supplemental funding. Hurricane Sandy revealed the new designation’s inability to limit spending as all supplemental outlays over the cap were simply designated “emergency” funds.<sup>20</sup>

The issue here is twofold. The Office of Management and Budget’s (OMB) current formula for requesting the DRF’s budget excludes disasters costing over \$500 million, although the United States experienced an average of one such event per year from 2001 through 2012.<sup>21</sup> Additionally, Congress’s attempt to limit spending proved ineffective when a catastrophic disaster required robust response and recovery funding. Adjustments to the OMB calculation would more accurately reflect disaster costs, but asking members of Congress to potentially limit funding to their own states and districts will likely fall on deaf ears. To address this problem, the 1995 Senate Bipartisan Task Force on Funding Disaster Relief concluded that, in addition to establishing more stringent criteria for the provision of disaster assistance, emphasizing and incentivizing hazard mitigation and relying on insurance to a greater degree were two other options for reducing federal expenditures.<sup>22</sup> A joint executive and legislative branch focus on the latter two options could satisfy the first, reducing costs of disasters at all levels and improving the resilience of communities.

Chapters 3 and 5 cover many of the potential options for emphasizing hazard mitigation, including the role Congress can play. Therefore, this section will address Congress’s role in promoting disaster insurance. Figure 4.1 reveals that although insured losses from natural disasters have increased at approximately twice the rate of all economic losses

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16. McCarthy, “Federal Stafford Act Disaster Assistance,” 18.

17. Bruce R. Lindsay, William L. Painter, and Francis X. McCarthy, “An Examination of Federal Disaster Relief under the Budget Control Act,” Congressional Research Service, November 8, 2013, 2–3, <https://www.fas.org/sgp/crs/misc/R42352.pdf>.

18. BuildStrong Coalition, “Testimony Of the BuildStrong Coalition Submitted to the United States Senate Homeland Security and Government Affairs Subcommittee on Emergency Management, Intergovernmental Relations, and the District of Columbia, Hearing on ‘The Role of Mitigation in Reducing Federal Expenditures for Disaster Response,’” May 14, 2014, 5, <http://www.hsgac.senate.gov/subcommittees/emdc/hearings/the-role-of-mitigation-in-reducing-federal-expenditures-for-disaster-response>.

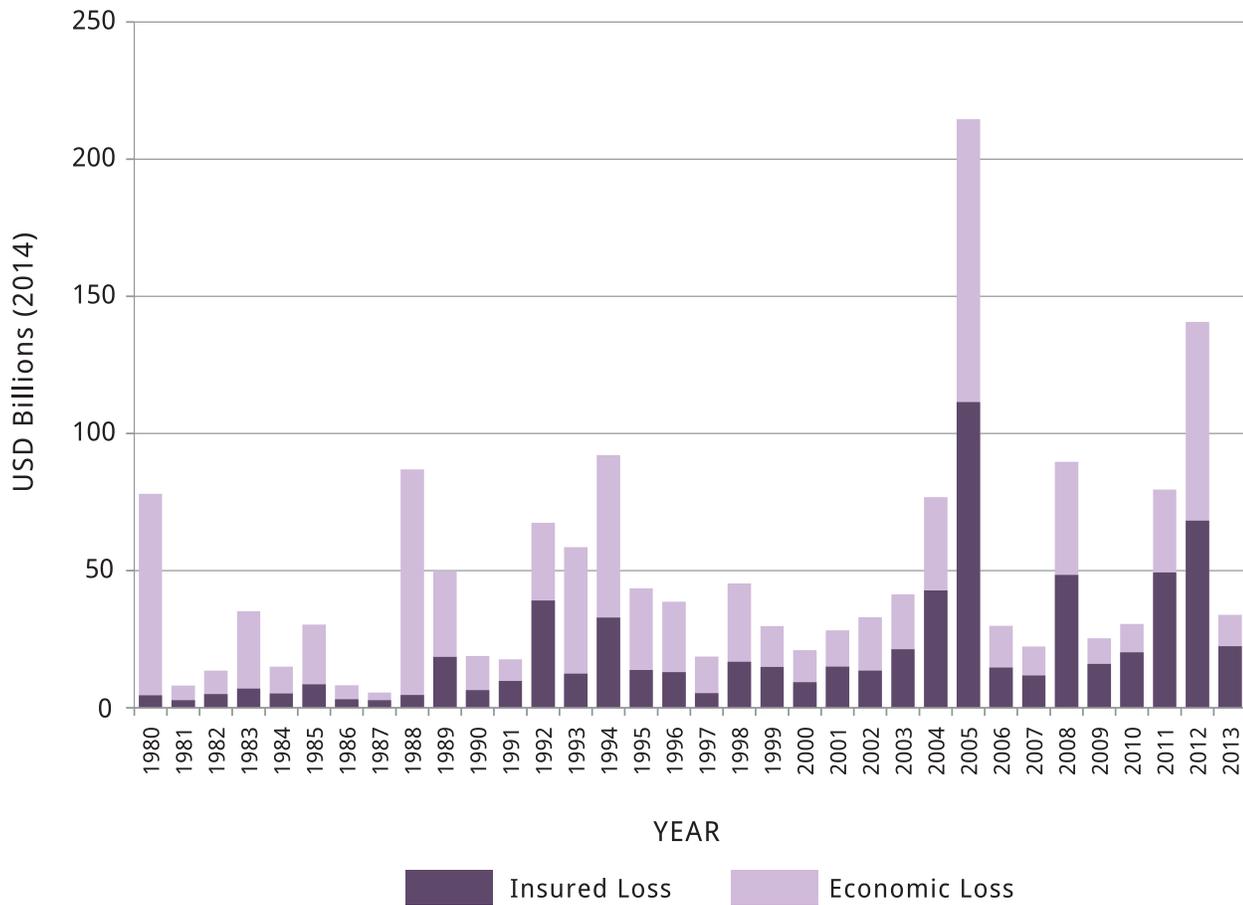
19. Lindsay, Painter, and McCarthy, “Federal Disaster Relief under the BCA,” 7.

20. *Ibid.*, 13.

21. *Ibid.*, 4.

22. McCarthy, “Federal Stafford Act Disaster Assistance,” 24.

**Figure 4.1. U.S. Economic and Insured Losses, 1980–2013**



Source: Aon Benfield.

from natural disasters, the gap for expensive disaster years, such as 2005 and 2012, still leaves roughly \$100 billion and \$50 billion, respectively, of losses uninsured.<sup>23</sup>

Members of Congress have introduced legislation with the intent of increasing the role of insurance in disaster relief funding. In March 2013, Representative Albio Sires of New Jersey introduced the Homeowners and Taxpayers Protection Act, which would establish a national catastrophe fund supported by premiums from state insurance to reinsure those plans and provide a backstop for protecting residential property from all hazards.<sup>24</sup> Proponents of this concept believe it will limit the cost burden on the federal government in the event of a catastrophe and prevent continued dramatic increases to homeowners

23. Aon Benfield, “Annual Global Climate and Catastrophe Report” (Chicago: Impact Forecasting, 2014), [http://thoughtleadership.aonbenfield.com/Documents/20140113\\_ab\\_if\\_annual\\_climate\\_catastrophe\\_report.pdf](http://thoughtleadership.aonbenfield.com/Documents/20140113_ab_if_annual_climate_catastrophe_report.pdf).

24. H.R. 1101, Homeowners and Taxpayers Protection Act of 2013, <http://www.gpo.gov/fdsys/pkg/BILLS-113hr1101ih/pdf/BILLS-113hr1101ih.pdf>.

insurance.<sup>25</sup> Meanwhile, opponents argue that a federal focus on strict land use and other mitigation policies would better serve taxpayers, since such a fund would expose policyholders to underwriting risks.<sup>26</sup> Spreading risk among homeowners in the United States with government-established contract requirements versus allowing reinsurance companies to set standards and pool policyholders around the world illustrates the key differences between the schools of thought. One expert stated that while establishing a national catastrophe fund may have intellectual appeal, U.S. citizens may also be weary of creating another large government program.<sup>27</sup> The stalled state of Representative Sires's bill, along with the provision in the Homeowner Flood Insurance Affordability Act of 2014 that authorizes the NFIP administrator to secure private reinsurance for the program, demonstrate a tendency toward a privatized backstop approach for disasters.<sup>28</sup>

The NFIP illustrates some of the fundamental issues facing insurers in keeping up with the escalating economic losses from disasters. Legislators have adjusted the NFIP framework twice in the past two years in attempts to balance the need to charge rates based upon actual risk with the desire to keep premiums affordable for affected home and business owners. The result reflects a dilemma between insolvency and the decision of many owners to forgo coverage, either way increasing the taxpayers' burden of disaster costs. The challenge of increasing the risk pool while maintaining actuarially sound rates to provide sufficient coverage has led Congress to encourage reducing risk on the front end through incentivizing mitigation for policyholders.<sup>29</sup> Continuing this trend will potentially reduce cost estimates in insurance calculations, helping to counter the increased risk from disaster frequency and magnitude and potentially lowering premiums. Additionally, Congress promotes coverage by barring the use of in-lieu-of contributions by state and local governments and nonprofits on uninsured buildings in designated Special Flood Hazard Areas (SFHAs).<sup>30</sup> While current legislation bars uninsured homeowners in SFHAs from receiving federal assistance, Congress could further encourage local governments in those areas to buy insurance by limiting the eligibility of uninsured public infrastructure damaged by floods to receive post-disaster grants.<sup>31</sup>

The difficulty in measuring true risk and providing actuarially sound rates presents another issue for the program. Developing an exact science that can account for every factor of a property's location is extremely complex. Federal executive and legislative

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25. James Loy, "Sandy One Year Later: How to Prepare for the Next Storm," *CQ Roll Call*, November 1, 2013, [http://www.rollcall.com/news/sandy\\_one\\_year\\_later\\_how\\_to\\_prepare\\_for\\_the\\_next\\_storm\\_commentary-228812-1.html](http://www.rollcall.com/news/sandy_one_year_later_how_to_prepare_for_the_next_storm_commentary-228812-1.html).

26. Herb Jackson, "Sandy Relief Fund Is Fodder for Growing Storm among Insurers," *The Record*, March 31, 2013, <http://www.northjersey.com/news/nj-state-news/sandy-relief-fund-is-fodder-for-growing-storm-among-insurers-1.564938>.

27. Study participant, one-on-one, not-for-attribution interview, August 2014.

28. Homeowner Flood Insurance Affordability Act of 2014, 128 STAT. 1025.

29. *Ibid.*, 128 STAT. 1026.

30. Stafford Act, Title IV, § 406 (c)(1)(C)(ii).

31. FEMA, "National Strategy Recommendations: Future Disaster Preparedness" (Washington, DC: DHS, September 6, 2013), 13, [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).

branch officials have indicated the accuracy challenges in the NFIP's flood mapping efforts, which exemplifies the frustration over rising premiums.<sup>32</sup> In addition to the questions over risk and premium rates, one expert noted that the NFIP has become more of a land use policy tool than an insurance program.<sup>33</sup> This insight raises the question of the value of maintaining livable coastlines, marshlands, and other flood-prone zones. The fact that marine-related industries account for one of every six U.S. jobs and over one-third of the U.S. gross national product originates in coastal regions reveals the importance of considering economic impact along with risk.<sup>34</sup> Striking a balance between maximizing the economic benefits of an area and minimizing perverse incentives for property owners to create a sustainable environment that can withstand, adapt, and rapidly recover from disasters presents a difficult challenge for communities.

Another potential opportunity for reducing federal cost shares involves the examination of liabilities for relief efforts related to man-made disasters. For the *Deepwater Horizon* oil spill in 2010, British Petroleum covered a large part of the recovery cost, spending over \$14 billion on response and cleanup alone through the end of 2013.<sup>35</sup> Additionally, Exxon paid \$2.1 billion in cleanup costs from the *Exxon Valdez* oil spill in 1989.<sup>36</sup> While these companies voluntarily agreed to pay these large sums, under OPA 90, private companies are only liable for removal costs and damages up to \$350 million for onshore facilities and deepwater ports, \$75 million for other offshore facilities, and \$22 million for large vessels.<sup>37</sup> Since these limits pale in comparison to the costs of potential catastrophes, not all private companies may prepare the financial resources necessary to cover the difference between obligated payments and total costs. Since the burden would then fall upon the federal government and taxpayers, Congress may wish to reexamine the thresholds for private-sector liability in the event of man-made disasters.

Members of Congress must choose wisely among the reform measures to propose and defend. A number of factors play into the decisionmaking process. Congressional efforts should include input from all affected agencies, levels of government, businesses, and individuals, outline any necessary funding mechanisms, and support a policy of disaster resilience through risk reduction, efficiency, and cost savings. By considering these factors and their accompanying nuances, legislators can make effective changes to major pieces of legislation that authorize and fund disaster preparedness and response efforts.

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32. Miller, "The Role of Mitigation in Reducing Federal Expenditures for Disaster Response."

33. Study participant, one-on-one, not-for-attribution interview, August 2014.

34. National Oceanic and Atmospheric Association, "Ocean," <http://www.noaa.gov/ocean.html>.

35. British Petroleum, "Gulf of Mexico Restoration," <http://www.bp.com/en/global/corporate/gulf-of-mexico-restoration.html>.

36. Mark A. Cohen, "A Taxonomy of Oil Spill Costs" (Washington, DC: Resources for the Future, June 2010), 4, <http://www.rff.org/Documents/RFF-BCK-Cohen-DHCosts.pdf>.

37. Oil Pollution Act of 1990 (OPA 90), P.L. 101-3801; 33 U.S. Code 2704(a).

# 5 | The Roles of the Private Sector and Public-Private Partnerships

With an increasing emphasis on a “whole of community” approach, philanthropic organizations, NGOs, and businesses play an integral role in preparing for and responding to disasters. These stakeholders can—and often do—contribute substantially to reducing the costs of disasters, improving response efficiency, and increasing overall resilience. Economies of scale in specific industries, as well as access to resources (financial and in-kind), can be leveraged at each stage in the emergency management cycle.

As noted earlier, success in governmental resilience efforts often depends in large part on effective communication among key players. This is also true regarding philanthropic, nongovernmental, and for-profit organizations, which can achieve disaster-related goals through improved communication and coordination with government entities before, during, and after disasters. Additionally, all levels of government can devote resources and provide incentives to foster public-private relationships and decrease the need for federal spending. Philanthropic, nongovernmental, and for-profit organizations can also address gaps in public-sector responses to catastrophes (e.g., mental health).

## Communication and Coordination

As noted in this report, many philanthropic organizations, NGOs, and private companies have extensive, hands-on experience and valuable capabilities in supporting emergency management and disaster relief efforts. Government and the private sector both benefit from coordinating and communicating as openly as possible about what they can and cannot bring to the table in order to address the full range of disaster resilience requirements, prevent unnecessary duplication in efforts, and streamline response activities. To support these efforts as efficiently and effectively as possible, each party must understand the parameters of the relationship, the objectives of each member, and the requirements and plans for sharing information and employing resources. PPPs, emergency operation centers, MOUs, and accessible databases all serve as mediums through which to do so.

## Private-sector volunteers help clear debris after a May 2013 tornado in Moore, Oklahoma.



Source: FEMA/George Armstrong, photographer, “Home Owner with Volunteers,” June 6, 2013, <http://www.fema.gov/media-library/assets/images/71439>.

### **FINDING #9: GOVERNMENT AND THE PRIVATE SECTOR HAVE IMPROVED COMMUNICATION IN RECENT YEARS, BUT COORDINATION EFFORTS REQUIRE MORE GIVE-AND-TAKE.**

During the response phase of a disaster, all levels of government often want information from the private sector on the impact of the disaster on businesses, especially critical infrastructure sectors.<sup>1</sup> Correspondingly, businesses interested in providing disaster relief need situational awareness to determine the who, what, where, when, and how of contributing resources.<sup>2</sup> To effectively fulfill both needs, many jurisdictions have incorporated the private sector into their established emergency operation centers, which coordinate response activities across all participating entities at their respective levels of government as well as among partners in other levels. Others have even set up specific business emergency operation centers (BEOCs) to focus exclusively on public-private efforts. For example, in the aftermath of Hurricane Katrina, Louisiana set up the LA BEOC, which began using a

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1. Study participant, one-on-one, not-for-attribution interview, March 2014.  
2. Ibid.

physical facility, a web portal, and e-mail and text alerts to communicate and coordinate among the state emergency management agency, state economic development agency, VOAD, and various private-sector partners.<sup>3</sup> Communities benefited from the LA BEOC after hurricanes Ike and Gustav in 2008, when the center helped to partner restaurants with shelters to provide people with food during their displacement. Experts estimate that effort saved taxpayers approximately \$1.5 million by replacing the need for federally purchased meals.<sup>4</sup>

FEMA has developed a National BEOC (NBEOC) that seeks to provide a platform for two-way information sharing between the public and private sector to identify capabilities-needs gaps, leverage national resources to support state and local jurisdictions, and prevent duplicative efforts.<sup>5</sup> However, the existence of the NBEOC can result in unnecessarily duplicative efforts for businesses that prefer to limit their coordination efforts to one level of government.<sup>6</sup> Additionally, a national headquarters team may have trouble providing the tactical-level support required of a BEOC. Despite these challenges, the NBEOC can prove effective by providing information for disasters that occur across state boundaries. Businesses may need to know the individual transportation regulations of multiple states, such as weight limits and any corresponding waivers, which the NBEOC could aggregate and provide.<sup>7</sup> Moreover, it could host a web portal that allows jurisdictions and businesses to participate as verified users and actively search and update points of contact, along with resource needs and capabilities. While state BEOCs have the advantage of providing localized knowledge, such a national database could help prevent duplicative efforts and streamline response for disasters involving multiple states.

In addition to BEOCs, other PPPs offer ways in which government, businesses, NGOs, and philanthropic organizations can synchronize efforts and improve exchanges of information during all phases of the emergency management cycle. PPPs can be organized within government or as private entities. Their missions can be broad in scope or focus on specific objectives, such as individual critical infrastructure and key resource sectors, volunteer and donation coordination, and business continuity of operations.<sup>8</sup>

Many jurisdictions across the country have developed PPPs to address these different areas of concern. For instance, Iowa established the Safeguard Iowa Partnership, which involves various public agencies, private businesses, and other organizations and develops

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3. FEMA, “State Partnership—Louisiana Business Emergency Operations Center,” <http://www.fema.gov/pdf/privatesector/labeoc.pdf>.

4. Business Civic Leadership Center, *The Role of Business in Disaster Response* (Washington, DC: U.S. Chamber of Commerce, 2012), 17, <http://ccc.uschamber.com/sites/default/files/documents/files/Role%20of%20Business%20in%20Disaster%20Response.pdf>.

5. FEMA, “National Business Operation Center,” [http://www.fema.gov/media-library-data/20130726-1852-25045-2704/fema\\_factsheet\\_nbeoc\\_final\\_508.pdf](http://www.fema.gov/media-library-data/20130726-1852-25045-2704/fema_factsheet_nbeoc_final_508.pdf).

6. Study participant, one-on-one, not-for-attribution interview, March 2014.

7. Study participant, one-on-one, not-for-attribution interview, May 2014.

8. International Association of Emergency Managers (IAEM) and National Incident Management Systems and Advanced Technologies (NIMSAT) Institute, “Compendium of Public-Private Partnerships for Emergency Management,” October 1, 2012, 11, [http://www.padres-ppp.org/NimsatPPP/resources/Final%20PPP%20Report\\_101812.pdf](http://www.padres-ppp.org/NimsatPPP/resources/Final%20PPP%20Report_101812.pdf).

communication and coordination tools such as standardized business surveys, access to public health alerts, a resource registry, and a portal to connect volunteers and donors to the state and VOAD.<sup>9</sup> Additionally, the model promotes self-sustainability through the pursuit of multiple funding streams, including grants, memberships, and the state government.<sup>10</sup>

While this example illustrates the potential benefits of PPPs, many businesses remain reluctant to participate in such programs due to privacy and favoritism concerns. Some businesses choose to donate resources to nonprofits like the Red Cross or VOAD, or they contribute directly to communities instead of contracting with government. Such methods of participation relieve businesses of disclosure and intellectual property concerns but still provide needed supplies to damaged areas. However, this uncoordinated approach, in some instances, requires government to stretch limited resources and spend money to contract logistical capabilities for supply distribution to areas unserved by the private sector.<sup>11</sup> Some PPPs have used MOUs to outline the shared purpose of the relationship, detail responsibilities and commitments of each party, guarantee the protection of confidential information to avoid the burden of contract regulations, explicitly identify program requirements, and ease the privacy concerns of businesses.<sup>12</sup> Still, only 28 percent of PPPs use MOUs, mainly due to issues with governmental conflicts of interest in potentially favoring one business over another.<sup>13</sup>

To solve these problems, PPP participants can learn from the national-level effort to build relationships with the private sector. FEMA established a rotating private-sector representative in the National Response Coordination Center, which coordinates information from all businesses in the industry.<sup>14</sup> By implementing this rotating system for a member of each industry and identifying their role as compilers and distributors of information to all other participating organizations, PPP participants might spur government to agree to MOUs and, in the process, potentially encourage more businesses to participate.

## Citizen Involvement

### **FINDING #10: CROWDSOURCING DATA OFFERS MANY OPPORTUNITIES FOR GOVERNMENT AGENCIES AND BUSINESSES TO LEVERAGE AVAILABLE INFORMATION AND SOLVE A RANGE OF ISSUES.**

In addition to partnering with businesses, government has the opportunity to collaborate with individuals. The idea of the “whole of community” approach to disaster resilience

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9. Ibid.

10. Dan Stoneking, “The Role of Public-Private Partnerships in Disaster Preparedness and Resilience” (remarks made at a CSIS panel discussion held January 30, 2013), <http://csis.org/event/role-public-private-partnerships-disaster-preparedness-and-resilience>.

11. Study participant, one-on-one, not-for-attribution interview, May 2014.

12. IAEM and NIMSAT, “Compendium of PPPs,” 56–57.

13. Ibid., 12.

14. Study participant, one-on-one, not-for-attribution interview, May 2014.

starts at the individual level. The emergence of the Internet, smartphones, and social media platforms has presented government with new opportunities to engage citizens and encourage personal preparedness. The federal government initiatives and campaigns include ready.gov, disasterassistance.gov, America's PrepareAthon!, and the Citizen Corps, all of which seek to actively involve individuals at each stage of the emergency management cycle. Many state and local jurisdictions and other organizations also have similar programs for citizen involvement. These initiatives often have websites, multiple social media accounts, and smartphone applications.

Although different levels of government have exploited technological resources to distribute information, collecting and analyzing data from the public remains a growth area for emergency management. Crowdsourcing data through social media networks can provide agencies with situational awareness and help direct resources to the hardest hit areas. During response efforts for Hurricane Sandy, FEMA used geographic data gathered by volunteers and compiled by the Humanitarian OpenStreetMap Team to map damaged areas.<sup>15</sup> Continuing to research and develop these types of capabilities can reduce costs, better direct response efforts, and inform communities of areas for improvement.

## Developing Resilience

As noted earlier, the federal government's definition of resilience lists three capability requirements: withstand, adapt, and rapidly recover.<sup>16</sup> In improving these capabilities, PPPs have made great headway throughout the emergency management cycle. However, additional actions will be required in order to limit the impact of disasters on society; such actions include empowering small businesses and planning for the long-term effects on a community's health and sustainability.

### SMALL BUSINESSES

#### **FINDING #11: SMALL BUSINESSES NEED IMPROVED INCENTIVES TO TAKE ACTION TO EFFECTIVELY PREPARE FOR THE EFFECTS OF FUTURE DISASTERS.**

Small businesses in disaster-prone areas often lack the ability (either in capabilities or connections) to provide meaningful support to government, NGOs, and philanthropic organizations; rather, they require assistance to rebound after a disaster.<sup>17</sup> Many efforts exist to help these businesses protect and mitigate against disasters, so that continuity of operations (COOP) or quick recovery can become viable options. FEMA runs a voluntary program, PS-Prep™, for businesses to adopt standards through a formal accreditation

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15. FEMA, "Hurricane Sandy FEMA After-Action Report."

16. Obama, "PPD-8."

17. UNISDR, "Small Businesses: Impact of Disasters and Building Resilience," 5.

process.<sup>18</sup> These standards seek to help businesses develop plans, protect data, minimize impacts on operations and financial losses, and improve reliability and recognition in the eyes of clients and suppliers.<sup>19</sup> Additionally, the American Red Cross runs a self-assessment program based upon these standards. The federal-level SBA also provides a list of tips that focus on insurance coverage and loan determinations. Despite such efforts to inform and prepare small businesses, a recent survey indicated that only 49 percent maintain a COOP plan.<sup>20</sup> Furthermore, in the wake of Hurricane Sandy, only 10 percent of small businesses in the impacted area reconsidered their disaster preparedness plans, and 70 percent did not believe their businesses were at risk for future disasters of similar magnitude.<sup>21</sup>

The greatest impediments to improving disaster preparedness among small businesses are cost and resource constraints. To address this issue, government and larger companies may play a greater role in incentivizing preparedness and mitigation for smaller businesses. For the efforts required to participate in the aforementioned COOP programs, a push by different jurisdictions to partner larger businesses that have more experience and resources with smaller businesses may help increase involvement in the programs. The United States can also learn from the efforts of countries such as Japan when considering methods for reducing the cost burden of developing mitigation techniques. For example, the Development Bank of Japan became the first financial institution to offer better borrowing terms to businesses that take steps to prepare and mitigate against disaster threats.<sup>22</sup> The bank evaluates each company based on 18 metrics, including business continuity awareness and training programs and redundancy of information systems.<sup>23</sup> Moreover, after the Great East Japan Earthquake in March 2011, Japan's Organization for Small & Medium Enterprises and Regional Innovation began offering, among other initiatives, low-interest loans for small businesses to improve the structure of their facilities to align with their business COOP plans.<sup>24</sup> Financial institutions and different levels of government in the United States could offer similar opportunities to small businesses in order to improve their resilience.

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18. FEMA, "Being Prepared: Makes Good Business Sense," [http://www.fema.gov/pdf/privatesector/FEMA\\_PS-Prep\\_One-Pager\\_Generic.pdf](http://www.fema.gov/pdf/privatesector/FEMA_PS-Prep_One-Pager_Generic.pdf).

19. Ibid.

20. FedEx Corp., "Despite Recent Disasters, Survey Shows Most Small Business Owners Still Not Getting Prepared," May 2, 2013, [news.van.fedex.com/despite-recent-disasters-survey-shows-most-small-business-owners-still-not-getting-prepared](http://news.van.fedex.com/despite-recent-disasters-survey-shows-most-small-business-owners-still-not-getting-prepared).

21. Ibid.

22. World Economic Forum, *Global Risk 2012*, 7th ed. (Geneva: World Economic Forum, 2012), 32, [http://www3.weforum.org/docs/WEF\\_GlobalRisks\\_Report\\_2012.pdf](http://www3.weforum.org/docs/WEF_GlobalRisks_Report_2012.pdf).

23. Ibid., 32–33.

24. Ministry of Economy, Trade, and Industry/Japan Small Business Research Institute, "2012 White Paper on Small and Medium Enterprises in Japan," September 2012, 229, [http://www.chusho.meti.go.jp/pamflet/hakusyo/H24/download/2012hakusho\\_eng.pdf](http://www.chusho.meti.go.jp/pamflet/hakusyo/H24/download/2012hakusho_eng.pdf).

## LONG-TERM CONSIDERATIONS: HEALTH AND SUSTAINABILITY

### **FINDING #12: PLANNING FOR THE LONG-TERM EFFECTS OF DISASTERS CAN BE EASILY OVERLOOKED IN DISASTER PREPAREDNESS AND RECOVERY. PRIVATE-SECTOR EFFORTS ENCOURAGE GOVERNMENT TO HEED LONG-TERM PLANNING.**

Disasters have many direct and indirect effects on the long-term health and sustainability of a community. Health, in this context, has many dimensions, ranging from economic and environmental to social and cultural.<sup>25</sup> There is a tendency to focus on short-term effects like the immediate care of individuals and the restoration of business operations when the private sector plans for disasters. However, a great and overlooked potential exists for the private sector to supplement government efforts on mitigation and fill the gaps in marginalized recovery areas (e.g., mental health).

As outlined in its third climate report and its initiative to invest in transportation infrastructure earlier this year, the Obama administration has prioritized climate change mitigation and hardening and updating critical infrastructure.<sup>26</sup> The private sector can play a dual role in mitigating the effects of disasters. First, businesses, NGOs, philanthropic organizations, and citizens can take steps to lessen the impact of disasters on their own establishments. Second, these actors can invest in the improvements of the rest of the community. As discussed earlier, the federal executive and legislative branches have already implemented certain tools to support mitigation activities and can take additional steps along with the private sector to increase participation. The public and private sectors can also address the second point through increased involvement and coordination.

There are many barriers to successful relationships between the public and private sectors in investing in the resilience of the whole community, especially in terms of coordinating efforts through different management structures. However, where such relationships do exist, they can exert an extraordinary, long-term impact on the community. For instance, the Health Impact Project, a collaboration between the Robert Wood Johnson Foundation and the Pew Charitable Trusts, supports the use of health impact assessments (HIAs), which provide policymakers at all levels of government with valuable information on the potential effects of construction and recovery projects on different environmental, social, and other health elements of the community.<sup>27</sup> The use of HIAs is quickly growing in the United States, with 10 times as many completed in 2013 as

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25. Study participant, one-on-one, not-for-attribution interview, April 2014.

26. White House, “Building a 21st Century Infrastructure: Modernizing Infrastructure Permitting,” fact sheet, May 14, 2014, <http://www.whitehouse.gov/the-press-office/2014/05/14/fact-sheet-building-21st-century-infrastructure-modernizing-infrastructure>; White House, “What Climate Change Means for Regions across America and Major Sectors of the Economy,” fact sheet, May 6, 2014, <http://www.whitehouse.gov/the-press-office/2014/05/06/fact-sheet-what-climate-change-means-regions-across-america-and-major-se>.

27. Study participant, one-on-one, not-for-attribution interview, April 2014.

2007.<sup>28</sup> They became particularly useful in the aftermath of Hurricane Sandy, with states, cities, and municipalities looking to determine the best land use policies, weigh the costs and benefits of buyouts, and avoid health hazards such as sewage overflows experienced after the storm.<sup>29</sup> This model, which fully accounts for the effects of disaster resilience on the entire community ecosystem and leverages the resource capabilities of the private sector to inform policymakers, could help provide metrics to establish the full impacts of disasters and assist government in determining risk, vulnerability, and priorities for investments.

The Water Institute of the Gulf represents another example of the private sector leveraging its capabilities to support government. Established with funding from the state of Louisiana and the Baton Rouge Area Foundation, this nonprofit organization was created to help implement Louisiana's 2012 Coastal Restoration Master Plan with substantiated, scientific input to coastal planning.<sup>30</sup> With the goals of reducing disaster risk, increasing sustainability, and improving community resilience, the Water Institute has also taken its analytical and modeling techniques from the Gulf and applied them internationally to similar geographic regions, among them the Mekong Delta in Vietnam. This form of PPP demonstrates the advantage of allowing an independent organization to augment the resources of government and bring interests of the public and private sector together to develop long-term solutions to disaster-related issues.

In addition to planning for all macro-level factors of disaster impact on communities, addressing the long-term effect on individuals' psychological well-being likely warrants more attention from both the public and private sectors. Individuals affected by disasters can experience a variety of stressors from trauma to physical and economic adversity.<sup>31</sup> These stressors can lead members of the affected population to display signs of anxiety and mood disorders, including but not limited to PTSD. Women, youth, and individuals with low economic status represent vulnerable populations that are especially susceptible to such disorders because they are disproportionately affected by the physical destruction wrought by disaster events.<sup>32</sup> Providing these individuals with long-term care and treatment takes a robust effort from the whole community. One study determined that expectations of unhelpful service and preferences for alternative coping mechanisms (e.g., family, faith) deterred significantly more people from seeking help than the stigma associated with mental health.<sup>33</sup> This finding illustrates the importance of communicating the availability and importance of services. New York City used such a strategy after Hurricane

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28. The Pew Charitable Trusts/Robert Wood Johnson Foundation, "Health Impact Project," fact sheet, September 22, 2013, <http://www.healthimpactproject.org/body/Health-Impact-Project-fact-sheet-calling-card-09-22-13.pdf>.

29. Study participant, one-on-one, not-for-attribution interview, April 2014; Hurricane Sandy Rebuilding Task Force, *Hurricane Sandy Rebuilding Strategy*, August 2013, 136, <http://portal.hud.gov/hudportal/documents/huddoc?id=HSRebuildingStrategy.pdf>.

30. Study participant, one-on-one, not-for-attribution interview, July 2014.

31. Sandro Galea et al., "Exposure to Hurricane-Related Stressors and Mental Illness after Hurricane Katrina," *Archives of General Psychiatry* 64, no. 12 (December 2007): 1427–1434.

32. *Ibid.*, 1433; Hurricane Sandy Rebuilding Task Force, "Hurricane Sandy Rebuilding Strategy," 171.

33. *Ibid.*, 33.

Sandy with its ad campaign for Project Hope, a federally funded program for free crisis counseling services.<sup>34</sup> Many government agencies, businesses, NGOs, and philanthropic organizations—including the FEMA Crisis Counseling program, the Substance Abuse and Mental Health Services Administration (SAMHSA), State Disaster Behavioral Health Coordinators, and trained American Red Cross and VOAD volunteers—have capabilities to address behavioral health needs immediately after disasters.<sup>35</sup>

Governments should provide behavioral health organizations with greater flexibility to address the long-term mental health impacts of disasters and ensure counseling and treatment services are available to victims on an extended basis. Congress could help address this need by increasing the currently limited ability for SAMHSA to take a small percentage from other programs' budgets to fund its Emergency Response Grants, which help communities partner with behavioral health organizations to best meet needs and transition to long-term care.<sup>36</sup> The collection, analysis, and distribution of information on this topic will likely prove beneficial to affected individuals recovering from the psychological effects of disasters, while also assisting communities in educating and promoting awareness of this issue.

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34. Robert Wood Johnson Foundation, "Building a More Resilient New York City," July 1, 2013, [http://www.rwjf.org/en/blogs/new-public-health/2013/07/building\\_a\\_more\\_resi.html](http://www.rwjf.org/en/blogs/new-public-health/2013/07/building_a_more_resi.html).

35. U.S. Department of Health and Human Services (HHS), "HHS Disaster Behavioral Health Concept of Operations," rev. ed., February 2014, 12, <http://www.phe.gov/Preparedness/planning/abc/Documents/dbh-conops-2014.pdf>.

36. *Ibid.*, 32; Substance Abuse and Mental Health Services Administration (SAMHSA), *Fiscal Year 2015 Justification of Estimates for Appropriations Committees* (Washington, DC: HHS, 2014), 41, <http://beta.samhsa.gov/sites/default/files/fy-2015-budget-cj.pdf>.

# 6 | Conclusions and Recommendations

This study arrived at 12 key findings related to disaster preparedness and resilience, ranging from the nature of stakeholder relationships to the effectiveness of individual initiatives. Taken as a whole, the findings indicate a shift in the emergency management community. After the 9/11 terrorist attacks in 2001 and Hurricane Katrina in 2005, multiple levels of government within the United States focused on improving communication and interoperability both horizontally and vertically. Since then, the public and private sectors have begun to work together more closely to engage the whole community, reduce costs, improve efficiency, and promote planning and mitigation. This study puts forth several recommendations that encourage decisionmakers at all levels of government and within the private sector to continue the path toward accomplishing these goals and achieving overall resilience.

The first recommendation addresses the first two findings, which reveal the lack of standard, quantifiable readiness and performance metrics for state and local governments to identify gaps, assess needs, and analyze cross-jurisdictional capabilities for disaster preparedness and resilience. DHS should first identify and standardize impact measurements for all THIRAs and AARs, then develop accompanying targets and performance metrics for the core capabilities. To complete this task, DHS should consider involving knowledgeable stakeholders in each core capability area in the development and determination of metrics. Furthermore, DHS should make available more data and analysis of data from the assessments of different jurisdictions. Implementing these changes will strengthen the feedback loop, which represents a crucial part of governmental efforts to improve capabilities at each stage in the emergency management cycle.

The next set of recommendations addresses the importance of promoting hazard mitigation to improve the “withstand” element of resilience. This study found that, despite recent changes, mitigation efforts are still underrepresented in the distribution of grant funding. Pre- and post-disaster mitigation grants should receive a greater share of overall preparedness and response assistance funding. Moreover, the executive branch and Congress can still do more to promote and incentivize mitigation. A joint effort between both branches could include targeted changes to legislation or the alteration of regulations that reflect the successes of recent FEMA pilot programs for the HMGP, dispute resolution, and/or public assistance alternative procedures. Government and the private sector may wish

to examine other methods of mitigation promotion as well, such as low-interest loans and other better borrowing terms, especially to help more small businesses prepare for future disasters. Communities may also benefit from mitigation efforts that account for long-term health and sustainability impacts of disasters. In this case, joint public-private efforts to identify, plan, and implement long-term risk and vulnerability reduction strategies that account for all potential community impacts, such as HIAs, may prove important.

As another means of avoiding future disaster costs to taxpayers, Congress should continue to examine different ways to increase the amount of insured and reinsured assets in the United States. The development of a standard, all-inclusive method for measuring risk and the continued factoring of mitigation efforts into premium rates may help promote sustainable building and land use practices and potentially increase participation of private insurers in high-risk disaster markets, which could lower or prevent significant increase of rates over time. To further incentivize insuring, Congress should limit the availability of assistance to all uninsured infrastructure in communities in SFHAs. For man-made disasters, Congress could potentially reduce future costs to taxpayers by reexamining thresholds for private-sector liability.

Another way of reducing costs and addressing the “adapt” and “rapid response” elements of resilience involves increasing flexibility, efficiency, and management in disaster preparedness and response. The executive branch, Congress, and the private sector have already taken several steps to improve these specific areas, including waiving regulations, authorizing pilot programs, and developing PPPs. The following recommendations attempt to further enhance these initiatives.

For the waiver or suspension of federal statutes and regulations, executive branch agencies should develop a clear framework that includes general and incident-specific waivers, the need for a request, and any limitations or exceptions to inform all jurisdictions of the potential range of requests. At the state and local level, governments should explore available options for transferring risk to the federal government and prepare MOUs to improve flexibility in waiver and credentialing policies for essential response missions. Additionally, all executive branch agencies should explore methods to improve flexibility in establishing mission assignments.

The effects of recent catastrophes have led Congress to increase flexibility in the types and amounts of disaster assistance. Congress should continue this trend in order to further improve scalability of response and recovery assistance. Congressional efforts could also include exercising its oversight role to critically evaluate pilot programs and authorize those that improve management and efficiency. Additionally, Congress could improve the funding flexibility of SAMHSA to address mental health impacts for different disasters.

PPPs engaged at all levels of government help leverage the capabilities of the whole community to improve disaster preparedness and response. FEMA’s NBEOC can enhance its efforts by creating a national database that compiles information on all relevant state regulations and hosting a web portal for verified public and private entities to update and

exchange information. State and local PPPs can increase participation and reduce trust and confidentiality issues by writing MOUs that detail responsibilities and guarantee protection and rotating representation from different businesses within an industry. Emergency management agencies should also work with the private sector to continue research and development efforts on exploiting crowdsourced data for better situational awareness.

Given the increasing frequency and magnitude of disasters and the mounting costs to taxpayers, the issue of disaster resilience warrants continued exploration. The purpose of this study was to provide information to decisionmakers in all areas of emergency management on ways to improve disaster resilience. These recommendations are based on research and not-for-attribution interviews with different stakeholders. Ultimately, addressing this issue will require efforts not from just one group but from executive branch, legislative branch, and private-sector partners to engage the whole community and better withstand, adapt, and rapidly respond to disasters.

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