

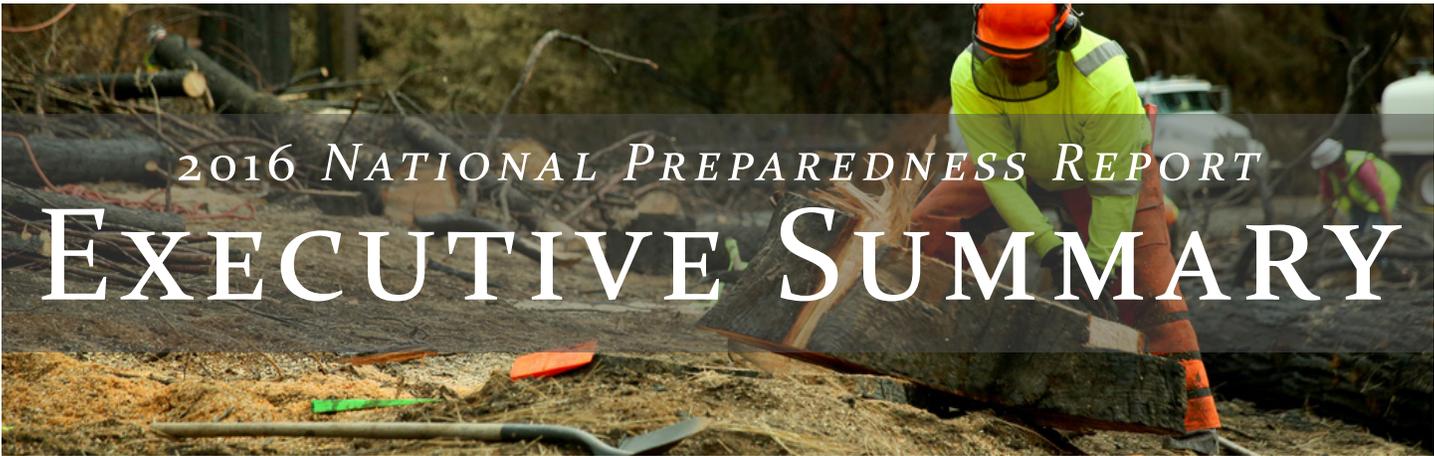
2016

National Preparedness Report

March 30, 2016



Homeland
Security



2016 NATIONAL PREPAREDNESS REPORT EXECUTIVE SUMMARY

The *National Preparedness Report* provides all levels of government, the private and nonprofit sectors, and the public with practical insights into preparedness to support decisions about program priorities, resource allocations, and community actions. The 2016 *National Preparedness Report* identifies cross-cutting findings that evaluate core capability performance, key findings in the Prevention, Protection, Mitigation, Response, and Recovery mission areas, and notable examples of preparedness progress over the past five years.

.....What is the National Preparedness Report?.....

The *National Preparedness Report* is an annual requirement of *Presidential Policy Directive 8: National Preparedness*. The report evaluates and measures gains individuals and communities, private and nonprofit sectors, faith-based organizations, and all levels of governments have made in preparedness and identifies where challenges remain. The 2016 *National Preparedness Report* focuses primarily on preparedness activities undertaken or reported during 2015 and summarizes progress in building, sustaining, and delivering the 32 core capabilities outlined in the *National Preparedness Goal*.

Cross Cutting Findings

The *National Preparedness Report* identifies three cross-cutting findings by evaluating current core capability performance (e.g., assessments, exercises) and indicators of future capability demand.

<p>.....</p> <p><i>Three core capabilities have demonstrated acceptable levels of performance, but face performance declines if not maintained to address emerging challenges. These capabilities to sustain are Planning; Public Health, Healthcare, and Emergency Medical Services; and Risk and Disaster Resilience Assessment.</i></p> <p>.....</p>	<p>.....</p> <p><i>States and territories continue to be more prepared to achieve their targets for Response core capabilities, while they are least prepared to meet their targets in the Recovery mission area.</i></p> <p>.....</p>	<p>.....</p> <p><i>Four core capabilities remain national areas for improvement—Cybersecurity, Economic Recovery, Housing, and Infrastructure Systems. Two additional core capabilities—Natural and Cultural Resources, and Supply Chain Integrity and Security—emerged as new national areas for improvement.</i></p> <p>.....</p>
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Key Findings

The 2016 *National Preparedness Report* includes 37 key findings across the five mission areas. The key findings are based on qualitative and quantitative data from all levels of government and the private and nonprofit sectors.



Prevention

The Prevention mission area prepares the Nation to avoid, prevent, or stop an imminent terrorist attack within the United States—such as the December 2015 attack in San Bernardino, California. A key finding in this mission area is:

- *Recent terrorist attacks exemplify the difficulty in successfully uncovering plots by self-radicalized individuals, who foreign terrorist organizations are inspiring to action.*

Protection

The Protection mission area secures the homeland against acts of terrorism and manmade or natural disasters. Malicious cyber activities and active-shooter incidents tested Protection capabilities in 2015, including the discovery of a breach in the U.S. Office of Personnel Management’s systems. Select key findings in this mission area include:



- *Despite increasing investments and improvements in cybersecurity information sharing, training, and countermeasures, major breaches in both public and private sectors underscore how vulnerable systems are to cyber threats, with major implications for protecting personal identity information, as well as national security.*
- *Partnerships to plan and coordinate whole-of-government efforts toward countering violent extremism are expanding, but how effectively these efforts will stem the radicalization and recruitment of Americans by foreign terrorist organizations is unknown.*
- *Federal agencies and private-sector partners are working to improve coordination for protective measures related to complex, coordinated attacks.*

Mitigation

The Mitigation mission area reduces loss of life and property by lessening the impact of disasters. Severe weather events in 2015, such as a destructive winter storm in New England and significant flooding in South Carolina, highlighted the importance of building these capabilities. Select key findings in this mission area include:



- *Climate change contributions to extreme weather and sea-level rise pose growing risks to critical infrastructure. Moreover, climate change can increase health-related risks by contributing to more intense heat waves and facilitating the spread of diseases, as well as increase poverty and political instability by impacting food security. Members of the public and private sectors are increasingly taking steps to address these risks by reducing their vulnerabilities and preparing for the consequences.*
- *While individual preparedness is a key element of community resilience, national surveys continue to highlight the difficulty of successfully engaging the public to avoid or manage risk. Federal agencies and community partners are acting to increase the effectiveness of their messages by targeting individual communities and tying preparedness messages to notable events.*
- *While new research stemming from recent events demonstrates the value of mitigation, the Federal Government has not developed a strategic approach to promote mitigation activities.*

Response

The Response mission area saves lives, protects property and the environment, and meets basic human needs after an incident has occurred. In 2015, several events stressed Response capabilities, including a major avian influenza outbreak and the worst wildland fire season since at least 1960. Select key findings in this mission area include:



- *The severity of the 2015 wildland fire season, which set a record for the total number of acres burned, strained fire suppression resources at all levels of government. Moreover, current and predicted trends regarding the frequency and severity of fires, as well as increasing growth at the interface of developed and natural areas, require increased preparedness efforts.*
- *The 2015 highly pathogenic avian influenza outbreak was the largest animal health emergency in U.S. history and revealed biosecurity and waste management gaps in the response to these types of events, including those posing a potential risk to human health.*
- *Federal, state, and local health partners began addressing the challenges that emerged from responding to the Ebola virus disease in 2014 (e.g., appropriate use of personal protective equipment for healthcare workers, research and development of medical countermeasures), but the outbreak highlights the need to sustain and build these capabilities for other infectious disease outbreaks.*

Recovery

The Recovery mission area maintains and restores important community assets after an incident, such as housing, infrastructure, businesses, and health and social services, as well as ensures consideration for natural and cultural resources. In 2015, events such as severe storms and flooding in the Pine Ridge Reservation in South Dakota demonstrated the adaptability of Recovery capabilities to unique challenges in a community. Select key findings in this mission area include:



- *While public- and private-sector partners made incremental improvements to the resiliency of transportation and other systems, ongoing deficiencies in critical infrastructure systems such as aging water mains and deteriorating drinking-water pipelines can amplify challenges in recovering from a disaster.*
- *Housing remains a national area for improvement for the fifth consecutive National Preparedness Report. Despite progress in addressing the disaster housing needs of low-income families, numerous structural problems remain in meeting survivor requirements for housing, from response through long-term recovery.*
- *Federal agencies have developed new guidance, courses, and training to assist all levels of government in addressing recovery shortfalls identified in previous state and territory self-assessments. Federal partners continue to integrate and institutionalize concepts identified in the National Disaster Recovery Framework at state and local levels.*

Multi-Year Progress

This report marks the fifth *National Preparedness Report* since the President issued *Presidential Policy Directive 8: National Preparedness* in 2011, and the Nation has achieved significant improvements in national preparedness over that time. Notable examples include:



- **Prevention:** Expanding the use and accuracy of biometrics through the achievement of full operational status for the Next Generation Identification Program
- **Protection:** Improving resilience to cybersecurity risks through increased availability of training and resources, and increased information sharing between the Federal Government and the private sector
- **Mitigation:** Enhancing the connection between the Mitigation and Recovery mission areas by encouraging resilient building practices through post-disaster funding
- **Response:** Extending the coverage of an integrated set of public alert and warning capabilities to a larger portion of the country
- **Recovery:** Strengthening Federal coordination of recovery assistance, including environmental and historic preservation reviews, in order to expedite the recovery process

Future reports will continue to evaluate the extent to which all levels of government, the private and nonprofit sectors, and the public have addressed areas for improvement and strengthened the security and resilience of the Nation.

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INTRODUCTION

Preparedness is the shared responsibility of all individuals, families, communities, private and nonprofit sectors, faith-based organizations, and levels of governments. Required annually by *Presidential Policy Directive 8: National Preparedness*, the *National Preparedness Report* is an annual assessment of progress in meeting the [National Preparedness Goal](#) (“the Goal”) of a secure and resilient Nation. The report summarizes and measures progress and remaining challenges in building, sustaining, and delivering the 32 core capabilities outlined in the Goal.¹ The intent of the *National Preparedness Report* is to provide partners across the Nation with practical insights into core capabilities to support decisions about program priorities, resource allocations, and community actions.

National Preparedness Goal: An Overview

The *National Preparedness Goal* defines what it means for the Nation to be prepared for all types of disasters and emergencies. The Goal itself, which was first released in 2011 and updated in 2015, is:

A secure and resilient Nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk.

The Goal identifies 32 necessary and distinct activities, called core capabilities, to address the greatest risks facing the Nation. The Goal organizes these core capabilities into five mission areas—Prevention, Protection, Mitigation, Response, and Recovery. Page 3 lists the core capabilities aligned to each mission area.

In 2015, the Goal underwent a review and update based on lessons learned, real-world events, and results from the first four *National Preparedness Reports*. While the Goal itself did not change, this refresh added a new core capability, Fire Management and Suppression, to provide greater visibility on firefighting capabilities and operations. The Federal Emergency Management Agency (FEMA) and other agencies also revised select core capability titles and definitions to provide additional detail and clarification. Together, these changes will help ensure that the Goal stays relevant to everyone and guides preparedness activities across the Nation.

Furthermore, the National Planning Frameworks (“the Frameworks”) set the strategy and doctrine for realizing the Goal, with one framework for each mission area. The Frameworks define objectives for the core capabilities and the critical tasks necessary to meet them. These tasks are not intended for any single jurisdiction or agency. Rather, achieving them requires a national effort involving everyone.

The *National Preparedness Report* provides an opportunity to evaluate gains made across the Nation in achieving the Goal and to identify where challenges remain.

¹ The *National Preparedness Report* addresses several reporting requirements from the *Post-Katrina Emergency Management Reform Act of 2006*, including the *Federal Preparedness Report*, *State Preparedness Report*, and *Catastrophic Resource Report*.

Research Approach

FEMA coordinates the development of the *National Preparedness Report* by incorporating qualitative and quantitative data to assess the Nation's progress in meeting the Goal. To ensure a comprehensive report that reflects progress and challenges occurring nationwide, FEMA takes several actions to collect, analyze, and present information from numerous sources, including:

- Applying a criteria-based approach in analyzing preparedness assessments, exercises, funding, and long-term trends influencing preparedness to identify national areas for improvement and capabilities to sustain among the 32 core capabilities;
- Analyzing 2015 Threat and Hazard Identification and Risk Assessments from 125 urban areas, states, territories, tribes, and FEMA Regions, as well as 2015 State Preparedness Report submissions from all 56 states and territories, in order to identify national shifts in the threats and hazards that jurisdictions are using to drive their capability requirements, compare relative performance among all capabilities, and identify performance trends over time;
- Conducting a data call with Federal departments and agencies to solicit their input and identify national preparedness accomplishments and related challenges;
- Completing a literature review of open-source material from all levels of government, academia, professional organizations, and the private sector for information on notable progress and challenges related to the 32 core capabilities identified in the Goal;
- Coordinating outreach with professional organizations and other non-Federal partners to obtain information, solicit perspectives on preparedness, and identify example case studies;
- Analyzing results from the National Emergency Management Association's biennial survey of state and territorial emergency management agency directors;
- Examining exercises and real-world events occurring or reported in 2015 to identify preparedness outcomes and lessons learned; and
- Engaging Federal departments, agencies, and senior interagency coordination groups to review and supplement report content.

WHAT IS THE 2015 THREAT AND HAZARD IDENTIFICATION AND RISK ASSESSMENT AND STATE PREPAREDNESS REPORT?

The 2016 *National Preparedness Report* includes results from the integrated 2015 Threat and Hazard Identification and Risk Assessment and State Preparedness Report. These programs support the National Preparedness System by helping states, territories, tribes, and urban areas annually assess their preparedness capabilities and identify capability gaps. Jurisdictions use the Threat and Hazard Identification and Risk Assessment process to determine threats and hazards of primary concern, establish capability targets, and analyze the resources required to address anticipated risks. Next, states and territories assess their current capability levels against their assessment targets in the State Preparedness Report. States, territories, and the Federal Government use this information to support decisions to build, validate, deliver, and sustain core capabilities. The Federal Government also uses the results to guide programs that help states close preparedness capability gaps.

Mission Areas and Core Capabilities



Core Capabilities

	Prevention	Protection	Mitigation	Response	Recovery
Planning	●	●	●	●	●
Public Information and Warning	●	●	●	●	●
Operational Coordination	●	●	●	●	●
Intelligence and Information Sharing	●	●			
Interdiction and Disruption	●	●			
Screening, Search, and Detection	●	●			
Forensics and Attribution	●				
Access Control and Identity Verification		●			
Cybersecurity		●			
Physical Protective Measures		●			
Risk Management for Protection Programs and Activities		●			
Supply Chain Integrity and Security		●			
Community Resilience			●		
Long-term Vulnerability Reduction			●		
Risk and Disaster Resilience Assessment			●		
Threats and Hazards Identification			●		
Critical Transportation				●	
Environmental Response/Health and Safety				●	
Fatality Management Services				●	
Fire Management and Suppression				●	
Logistics and Supply Chain Management				●	
Mass Care Services				●	
Mass Search and Rescue Operations				●	
On-scene Security, Protection, and Law Enforcement				●	
Operational Communications				●	
Public Health, Healthcare, and Emergency Medical Services				●	
Situational Assessment				●	
Infrastructure Systems				●	●
Economic Recovery					●
Health and Social Services					●
Housing					●
Natural and Cultural Resources					●

The 2016 *National Preparedness Report* reflects the input of more than 450 data sources and 190 stakeholders, including 66 non-Federal organizations.

SOURCES

FEMA compiled the 2016 *National Preparedness Report* using a combination of qualitative and quantitative preparedness data and contributions from multiple sources.

BY THE NUMBERS

116

Federal Data Call Submissions

124

Federal Offices Engaged

450+

Data Sources Referenced

125

Threat and Hazard Identification and Risk Assessments

56

State Preparedness Report Submissions

NON-FEDERAL COMMUNITY ENGAGEMENT INCLUDED:

- American Red Cross
- National Emergency Management Association
- National Voluntary Organizations Active in Disaster
- Humanity Road
- National Domestic Preparedness Consortium
- Other Private-sector Partners

FEMA reviewed, analyzed, and synthesized these data sources to derive key findings that offer insights on critical issues in preparedness. The 2016 *National Preparedness Report* uses the critical tasks defined in the Frameworks to inform the development of key findings across the five mission areas. Additionally, five criteria guide the identification of key findings:

- Progress toward or degradation of resilience—i.e., the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies;
- Significant shifts in resources (e.g., increased expenditures, major initiatives, underinvestment) to support preparedness;
- Impacts on multiple levels of government and non-Federal partners, including their level of involvement, progress, and challenges;
- Trend data that show progress or change; and
- Demonstrated progress in addressing national-level strategies and policies that set priorities to prepare the Nation and improve capabilities.

For inclusion in the *National Preparedness Report*, key findings must satisfy at least two of the five criteria. This 2016 edition focuses on preparedness activities undertaken or reported in 2015. In total, the report identifies 37 key findings.

Report Organization

The 2016 *National Preparedness Report* begins with **Multi-Year Progress Highlights** that identify key preparedness improvements since the release of *Presidential Policy Directive 8: National Preparedness* in 2011. Next, the **2015 Year in Review** highlights notable events in 2015 that tested the Nation’s preparedness and their relevance to key findings in the report. The report then presents three **Cross-Cutting Findings** that use various preparedness indicators such as

State Preparedness Report results and exercise data to assess performance among the all core capabilities and derive new insights.

The remainder of the report is divided into five sections based on the Goal's five mission areas: Prevention, Protection, Mitigation, Response, and Recovery. Each of these sections begins with a **Mission Area Overview**, which includes the following elements:

- **Core Capabilities in Practice:** A discussion of the core capabilities and how they function through events and preparedness activities in 2015;
- **Then and Now:** An update on preparedness initiatives first reported in the 2012 and 2013 *National Preparedness Reports*;
- **Preparedness Trends and Figures:** Case studies that quantitatively illustrate changes in preparedness over time;
- **By the Numbers:** Measureable achievements in current programs and initiatives;
- **Preparedness Snapshots:** Short accounts of preparedness accomplishments from across the country; and
- **State Perspectives on Preparedness:** National-level trends and highlights from the 2015 State Preparedness Report submissions.

Each overview is followed by a series of mission area **Key Findings**. The key findings address national-level areas of progress and remaining challenges in building, sustaining, and delivering the core capabilities. They are based on qualitative and quantitative data, and the supporting narratives include maps, figures, and case studies to provide insights into achievements and challenges.

Appendix A. Grant Case Studies illustrates the impact of Federal grants on preparedness in four jurisdictions. In addition, the appendix summarizes two case studies focused on grant projects that positively affected the 2014 response to Ebola virus disease, including one examining how investments over time enabled New York City to quickly implement an effective response to the disease.

Appendix B. Acronym List defines acronyms that appear in the 2016 *National Preparedness Report*.



This report marks the fifth *National Preparedness Report* since the White House released *Presidential Policy Directive 8: National Preparedness* in 2011. One intent of the Directive was to further galvanize Federal agencies into taking actions that would strengthen the security and resilience of the Nation. Since 2011, Federal agencies—often in partnership with other preparedness stakeholders across the country—have undertaken numerous actions to increase national preparedness. This section highlights key improvements in each mission area over the past five years.

Prevention

Achieving full operational status for the Next Generation Identification program expands the use and accuracy of biometrics



Increased information needs of law enforcement and advancements in technology required improvements to the Nation’s terrorist and criminal biometric identification capabilities. To meet this need, in 2010, the Federal Bureau of Investigation (FBI) initiated the Next Generation Identification biometric program to help law enforcement officers use biometric data (such as fingerprints, facial recognition, and iris scans) to identify and interdict malicious actors. The Next Generation Identification system replaced and expanded on the capabilities of the FBI’s legacy system, and it is now fully operational and available nationwide. Moreover, the new system can interface with counterpart systems in the U.S. Department of Defense (DoD) and the U.S. Department of Homeland Security (DHS), providing access to additional biometric data for a greater number of authorized users. As a result, the system allows law enforcement to investigate and interdict potential criminal and terrorist actors with greater accuracy and timeliness.

Increasing the number of fusion centers that meet designated standards for gathering, receiving, analyzing, and sharing threat-related information



Recent terrorist attacks by homegrown violent extremists, including the 2013 Boston Marathon bombings and 2015 San Bernardino shootings, underscore the importance of state- and local-level intelligence sharing. Since 2011, state and major urban area fusion centers—collectively, the National Network of Fusion Centers—have strengthened their capabilities to gather/receive, analyze, and share threat-related information across all levels of government. In 2015, the National Network of Fusion Centers met its highest designated standard for categorizing data and sharing intelligence with fusion center customers. Meeting this standard allows the National Network of Fusion Centers to better integrate resources from individual fusion centers and further assist Federal, state, tribal, territorial, and local law enforcement and homeland security partners in preventing potential threats of terrorism.

Expanding training and support to enhance capabilities for chemical, biological, radiological, nuclear, and explosive threats

In 2014, FBI supported joint investigations with Moldovan authorities that targeted two networks smuggling allegedly radioactive material into Moldova. The investigations, which



resulted in arrests in December 2014 and February 2015, demonstrated the continuing potential for terrorist groups to acquire materials to develop weapons of mass destruction. Since 2011, the Federal Government has expanded technical assistance and training programs to enhance the Nation’s capabilities to prevent chemical, biological, radiological, nuclear, and explosive threats. For example, in 2015, the DoD Defense Threat Reduction Agency provided modeling support for 34 planning efforts and exercises that address chemical, biological, radiological, nuclear, and explosive threats. First responders and on-scene commanders used the modeling products to determine locations for incident command posts and make decisions on evacuation and sheltering. Efforts such as these help reduce the Nation’s overall risk from chemical, biological, radiological, nuclear, and explosive incidents.

Protection

Securing vulnerable nuclear and radiological materials around the world



Use of nuclear and radiological materials by terrorists was a significant concern after September 11, 2001. By 2013, at the culmination of the White House’s four-year effort to reduce the availability of radiological materials, the U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) had removed or confirmed the disposition of 5,110 kg of highly enriched uranium and plutonium from around the world. NNSA continued to build on that success in 2015, with plans to remove an additional 125 kg of highly enriched uranium and plutonium from countries such as Kazakhstan, Uzbekistan, and Jamaica, for a cumulative total of 5,332 kg. Reducing the number of overseas reactors and radiological material lessens the likelihood of terrorists acquiring material for dirty bombs.

Improving abilities to detect and address chemical, biological, nuclear, and radiological threats



Interdicting chemical, biological, nuclear, and radiological threats requires sophisticated technologies to detect small amounts of very dangerous materials. Programs such as DHS’s BioWatch and the U.S. Customs and Border Protection’s (CBP’s) Container Security Initiative have helped build and sustain the Nation’s interdiction capabilities. Over the past five years, BioWatch and the Container Security Initiative have improved integration and cooperation with local authorities in approximately 30 municipalities and 58 ports, respectively. For example, since 2011, the BioWatch program has either led or supported more than 65 technical assistance days, drills, and exercises, with participation from more than 500 Federal, state, and local partners. These initiatives represent an effort to screen, search, and detect a wide variety of threats and have left the Nation better prepared to protect against them.

Expanding the Nation’s resilience to cybersecurity risks by increasing the availability of cybersecurity training and resources and increasing information sharing between the Federal Government and the private sector



Cybersecurity has emerged as one of the most critical preparedness challenges over the past five years. To better address this issue, Federal partners sponsored the first-ever National Level Exercise focused on a cyber scenario in 2012—an event that contributed to improved coordination between the Federal Government and the private sector during disruptions targeting U.S. banks later that year. In 2013, the President issued Executive Order 13636: *Improving Critical Infrastructure Cybersecurity*, which directed greater attention and resources to the threat posed by malicious cyber activity on critical infrastructure and promoted information sharing about cyber threats between the Federal Government and the private sector. Despite progress, the Nation continues to face significant cybersecurity challenges as demonstrated by the 2015 breaches at the U.S. Office of Personnel Management (OPM) and cybersecurity’s presence as a recurring national area for improvement in each of the first five *National Preparedness Reports*. In December 2015, Congress passed the *Cybersecurity Act*, which establishes the National Cybersecurity and Communications Integration Center as the Nation’s hub for public-private cybersecurity

information sharing, creates a set of incentives such as targeted liability protections to encourage private-sector participation, and mandates Federal agency participation in key DHS cybersecurity initiatives, among other important requirements.

Mitigation

Expanding efforts to plan for and adapt to hazards posed by climate change



In 2013, the President released his *Climate Action Plan*, directing Federal agencies to prepare for the impacts of climate change. One year later, 38 agencies released climate action plans, which outline the activities agencies will take to prepare for climate change effects such as sea-level rise, severe weather, and extreme temperatures. Also in 2014, a partnership of Federal agencies and organizations developed the Climate Resilience Toolkit to help communities manage their climate-related risks and improve resilience to extreme weather events. In addition, the U.S. Department of Housing and Urban Development (HUD) sponsored the Rebuild by Design competition to encourage communities to build infrastructure capable of withstanding more severe weather exacerbated by climate change. These ongoing efforts are helping the Nation improve disaster preparedness by taking into account the added consideration of long-term changes to the planet’s climate.

Strengthening links between Mitigation and Recovery mission areas by tying resilient building practices to funding for post-disaster recovery



The devastation Hurricane Sandy caused in 2012 provided an opportunity for mitigation- and recovery-focused stakeholders to work together to rebuild in a more resilient way. Following the model of the Rebuild by Design competition and recommendations from the Hurricane Sandy Task Force, HUD partnered with other Federal agencies and the Rockefeller Foundation to pilot the first-ever National Disaster Resilience Competition. In January 2016, the competition awarded \$1 billion for resilient housing and infrastructure projects to states and communities that experienced major disasters between 2011 and 2013. The National Disaster Resilience Competition and similar initiatives ensure that recovery funding is used not just to build back, but to build back stronger.

Developing the Federal Flood Risk Management Standard



In 2013, the President released the *Climate Action Plan* and *Executive Order 13653: Preparing the United States for the Impacts of Climate Change*. Both policies direct Federal agencies to support climate-resilient investments, share data and tools to inform decisions on climate change preparedness, and facilitate collaboration among the whole community. In response, Federal agencies developed the Federal Flood Risk Management Standard. Established in February 2015 within *Executive Order 13690*, this standard includes requirements for all future Federal actions in and affecting floodplains in order to increase the level of resilience to floods. This includes a recommendation to use climate-informed science to determine the appropriate vertical flood elevation (and corresponding horizontal floodplain) to address current and future flood risk and ensure that federally funded projects last as long as intended.

Response

Increasing the portion of the U.S. population covered by an integrated set of public alert and warning capabilities

In reaction to shortcomings identified in the Federal Government’s response to Hurricane Katrina, FEMA accelerated efforts to integrate the Nation’s public alert and warning platforms



into the Integrated Public Alert and Warning System (IPAWS). IPAWS expands on traditional public alert and warning capabilities by delivering a single, geographically targeted message over more devices and to more people before, during, and after an incident. In 2011, IPAWS covered 84 percent of the U.S. population, up from approximately 67 percent in 2009. By 2015, FEMA had extended coverage to over 90 percent of the U.S. population, including 49 states and more than 600 counties. The continued expansion of IPAWS ensures that public safety officials have the tools necessary to issue critical public alerts and warnings.

Creating new, and improving existing, active-shooter response planning and training resources



An FBI study of active-shooter events in the United States between 2000 and 2013 found an increase in both their number and severity over that time period. In 2015, several active-shooter incidents captured national attention, including shootings in Charleston, South Carolina; Chattanooga, Tennessee; and San Bernardino, California. Federal agencies and private-sector partners have promoted an integrated approach to improving response to active-shooter incidents by creating new planning and training resources, or enhancing existing ones. For example, in 2013, the Federal Interagency Committee on Emergency Medical Services developed a set of strategies to improve coordination and implement national standards for public safety responses during mass casualty incidents. FBI and the National Domestic Preparedness Consortium have also trained thousands of law enforcement and emergency personnel on responding to active-shooter events.

Providing a unified approach to deliver mass care services through the National Mass Care Strategy



In October 2010, FEMA and the American Red Cross signed a Memorandum of Agreement to collaborate with the National Voluntary Organizations Active in Disaster to develop and implement the first-ever *National Mass Care Strategy*. The strategy, issued in 2012, recommends courses of action for the delivery of improved mass care service to the Nation. A large and diverse set of mass care stakeholders have conducted national exercises to test the strategy since 2012, and the 2014 National Mass Care Exercise validated lessons learned and best practices derived from these exercises as being effective and usable by states and other large jurisdictions to improve coordinated delivery of mass care services immediately following a disaster.

Recovery

Applying the National Disaster Recovery Framework in real-world incidents and familiarizing national stakeholders with its principles



The Nation lacked a cohesive approach for disaster recovery planning prior to 2011. The *National Disaster Recovery Framework*, released in September 2011, addressed this gap and established roles and responsibilities, policies, and critical recovery priorities. Federal partners formally activated the *National Disaster Recovery Framework* for the first time in 2012, implementing key elements to help communities recover from severe drought, Hurricane Isaac, and Hurricane Sandy. In 2014, the Santa Clara Pueblo became the first tribal nation to formally implement the framework to coordinate recovery with Federal, state, local, and nonprofit partners. State and local communities have increasingly incorporated key concepts of the *National Disaster Recovery Framework* into their own disaster recovery strategies.

Improving coordination of Federal assistance to support recovery, including expediting reviews of environmental and historic preservation requirements to accelerate the recovery process

Lessons learned from Hurricane Sandy and other disasters revealed a need for improved coordination among Federal agencies supporting disaster recovery. To help address this need, in 2014, the Federal Government established the Unified Federal Review process to expedite Federal environmental and historic preservation reviews for large-scale infrastructure projects.

In 2015, the Federal Government published a guide outlining the new process for stakeholders at the state, tribal, and local levels applying for Federal disaster assistance in order to accelerate community recovery.

Integrating research and lessons learned from real-world incidents to improve outcomes in health and social services for disaster-affected communities



Past disasters have shown that healthcare facilities and hospitals need to increase their investments in emergency preparedness tools, data, resources, and equipment. In the last several years, the Nation has invested in electronic health record systems, equipment such as generators and temporary hospitals, and training and exercise initiatives to ensure that the healthcare sector can deliver fast and effective support to disaster survivors. Medical response and recovery efforts following Hurricane Sandy in 2012, the 2013 Boston Marathon Bombings, and the 2015 Amtrak crash in Philadelphia demonstrated improved capabilities in patient care, communication between health and non-health sectors, and continuity of hospital operations.



PREPAREDNESS CASE STUDY:
NEW ORLEANS HURRICANE KATRINA RETROSPECTIVE

In 2015, the Nation marked the 10-year anniversary of Hurricane Katrina, the largest, most destructive disaster in U.S. history. Hurricane Katrina resulted in more than 1,000 fatalities, more than one million displaced persons, and damages estimated at \$151 billion for the Gulf Coast region. The City of New Orleans was particularly hard-hit. The protective infrastructure supporting its hurricane defense system failed with disastrous consequences. Storm surge caused levees and floodwalls to fail or breach in more than 50 locations, and approximately 80 percent of the city experienced flooding, with some areas submerged by more than 15 feet of water.

This case study examines progress in preparedness since Hurricane Katrina, including lessons learned and ongoing efforts in New Orleans to protect against, mitigate, respond to, and recover from future threats and hazards.

A Holistic Approach to Recovery

Several factors—such as low home ownership rates, diminished community services, a struggling education system, a high crime rate, and poverty rates more than double the national average—posed difficulties for New Orleans’s recovery from Hurricane Katrina. Through extensive engagement with residents, civic leaders, and experts, city officials and nongovernmental organizations developed a shared vision for the city’s recovery that went beyond immediate rebuilding to addressing these challenges. The 2007 *Unified New Orleans Plan* not only addressed flood risk management and infrastructure

restoration, but also focused on community resilience and economic growth and sustainability. The plan’s goals included increasing affordable housing, improving blighted neighborhoods, and strengthening and diversifying the economy.

In 2015, the Data Center, a think tank focused on southeast Louisiana, issued *New Orleans Index at Ten*, which reported that the city has made progress in recovering from Hurricane Katrina. For example, a substantial population decline occurred in the wake of the

storm. By 2015, however, the population of New Orleans had grown to more than three-quarters of its pre-Katrina level. Job growth has also rebounded. By 2014, New Orleans had achieved job growth five percent above 2008 levels, exceeding the Nation, which had only reached one percent above 2008 levels. In particular, knowledge-based industries—such as water management and video

production—have grown by thousands of jobs since 2010. However, the Data Center also found that challenges continue. More work remains in improving the education system and ensuring that economic growth is more inclusive. Progress in these areas will enable communities to better adapt to, respond to, and recover from future disasters.

Applying the Lessons Learned at the National Level

Hurricane Katrina changed not only how New Orleans approached disaster recovery, it also transformed how the Nation approaches preparedness and emergency management. Lessons learned from the hurricane revealed Federal shortcomings in preparing for and responding to the disaster, including inadequate coordination with state and local partners. *The Post-Katrina Emergency Management Reform Act of 2006* attempted to address these gaps in a number of ways by clarifying FEMA’s responsibilities, enhancing its regional offices, providing the agency with new preparedness functions, and strengthening Federal incident response teams. These changes sought to accelerate assistance and Federal support where necessary to save lives, prevent human suffering, or mitigate severe damage.

for at least one day after Katrina made landfall, and DoD resources were poorly integrated into the overall response. To improve information sharing and better integrate its resources into future responses, DoD subsequently assigned liaisons to each FEMA regional office and initiated joint-planning efforts with state and local officials.

Lessons learned from Hurricane Katrina informed the establishment in 2011 of the *National Preparedness Goal* and the National Preparedness System, which emphasize an all-of-Nation approach to preparing for threats and hazards that pose a significant risk to the country. The system also put into place a capabilities-based approach to preparedness planning that is applicable to all five mission areas. Federal, state, and local communities have applied this flexible and scalable system successfully in response to a number of disasters, including Hurricane Sandy in 2012 and the Boston Marathon bombing in 2013.

Hurricane Katrina also revealed the need to improve coordination among Federal agencies. For example, DoD officials were unaware of the levee breaches in New Orleans

Progress towards Resilience

The recovery from Hurricane Katrina provided an opportunity to create communities that are more resilient to future disasters. For example, in rebuilding New Orleans’s hurricane defense system, the U.S. Army Corps of Engineers (USACE) increased the system’s resilience to stronger storms. USACE strengthened levees, floodwalls, pump stations, and other structures to defend New Orleans against a flood whose severity has only a one-percent chance of happening in any year. The hurricane defense system includes a 26-foot surge barrier, as well as the world’s largest pumping station. Moreover, a new Veterans Affairs Medical Center under construction in downtown New Orleans will be able to provide 1,000 people with essential supplies and services for five days. The center will locate its mission-critical services at least 20 feet above the ground to protect them from flooding.

and transforming city systems to promote growth and increase preparedness. One example of ongoing adaptation activities that the strategy supports is coastal protection and restoration efforts. Louisiana has been losing coastal wetlands that buffer the region against storm surge at a rate of more than 16 square miles per year.

Supporting these efforts, the Corporation for National Community Service selected New Orleans in August 2015 as one of 10 Resilience AmeriCorps cities. This new program supports low-income communities in developing plans for becoming more resilient against shocks and stresses. In December 2015, the Mayor of New Orleans also pledged to contribute 10 percent of the city’s annual budget toward resilience-building projects central to the *Resilient New Orleans* strategy. Moreover, in January 2016, the city secured \$141 million to support *Resilient New Orleans* projects through HUD’s National Disaster Resilience Competition, which will assist in building citywide resilience.

To guide these and other resilience-building efforts, New Orleans unveiled its first-ever comprehensive resilience strategy in August 2015. Developed in collaboration with the Rockefeller Foundation’s *100 Resilient Cities* initiative, the *Resilient New Orleans* strategy identifies 41 actions that enhance resilience through adapting to the changing environment, improving equal access to opportunities,

While recovery in New Orleans remains ongoing, these investments and activities underscore a comprehensive effort to focus recovery toward a broader, more systematic focus on resilience.



In 2015, the Nation faced a broad range of threats and hazards that reaffirm the value of a capabilities-based approach to preparedness. Events illustrated where the Nation has done well in building, delivering, and sustaining the 32 core capabilities identified in the *National Preparedness Goal*, and where work remains to be done. In particular, the severe and rare nature of several events in 2015—including the largest animal health emergency in the Nation’s history; a terrorist attack at a facility in San Bernardino, California; and the worst wildland fire season since at least 1960—has identified new challenges and prompted action to improve preparedness. These challenges and actions are explored further in key findings of this report.

Animal Disease



In 2015, the United States experienced the worst outbreak of highly pathogenic avian influenza in its history. The outbreak affected more than 48 million poultry (in commercial flocks) across nine states, resulted in \$3.3 billion in estimated economic losses, and led officials to declare states of emergency in five states. Avian influenza viruses also pose a potential pandemic threat, as they can mutate to forms that can transfer to and among humans.

Given its unprecedented scale, the outbreak presented an important test of Federal capabilities to support state and local jurisdictions. The U.S. Department of Health and Human Services (HHS) Centers for Disease Control and Prevention (CDC) developed guidance for testing, prophylaxis, and infection control. In addition, the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) coordinated with state and local authorities on response efforts, which included depopulating poultry flocks at affected farms, safely disposing of poultry carcasses, and decontaminating people and equipment. For an analysis of lessons learned from the outbreak, see page 75.

Drinking Water Contamination



An incident involving lead contamination of a city’s drinking water supply revealed the consequences of aged water infrastructure on public health. In April 2014, the City of Flint, Michigan, switched to using the Flint River as its water source. Subsequently, the city experienced issues with water quality, as high levels of lead leached from lead-based service lines and contaminated the drinking water supply. In September, doctors presented findings that indicated an increase in the percentage of children with elevated levels of lead in their blood following the switch to Flint River water. On January 16, 2016, the President signed an emergency declaration ordering Federal assistance to support the response in Flint. HHS is serving as the designated lead Federal agency for coordinating Federal response and recovery, which includes efforts by the U.S. Environmental Protection Agency (EPA), FEMA, HUD, and USDA. In addition, the American Water Works Association has commissioned a study to estimate how many lead service lines remain in the United States, as well as the cost of replacing them. For additional analysis on the challenges with improving existing infrastructure systems, see page 89.

Droughts



Confronted with one of the most severe and persistent droughts on record in California, the Governor declared a continued State of Emergency in April and signed an executive order with 31 provisions to save water, increase enforcement against wasting water, invest in new technologies for water management, and streamline the state’s drought response. For example, the executive order imposed a mandatory reduction of potable water use by 25 percent (compared to amounts used in 2013) for cities and towns through the end of February 2016. Additional actions taken to address the current drought in California, as well as future droughts, are discussed on page 62.

Toward the end of 2015, California received some drought relief, due in part to the effects of a powerful El Niño. An El Niño is a weather pattern characterized by unusually warm ocean temperatures along the Equator in the Pacific Ocean. The 2015–16 El Niño is among the three strongest since 1950. Previous El Niño events have had important consequences for weather and climate over the United States, including bringing cooler and wetter weather to southern states in winter months. In California, heavy rainfall shrunk areas affected by exceptional drought to 38 percent as of February 9, 2016 (down from a peak of 47 percent in April 2015).

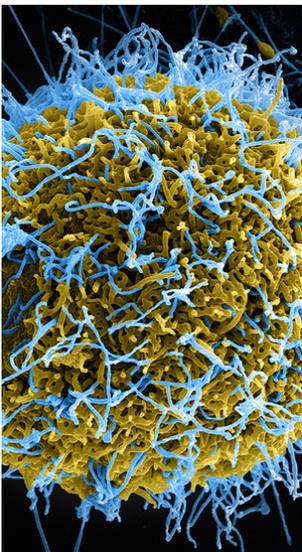
More broadly, the 2015–16 El Niño underscores how climate influences risk. For an analysis of efforts in 2015 to address the risks posed by climate change, including its impacts on public health and national security, see pages 54 and 64.

Hazardous Materials Incidents



Rail movement of higher volumes of shale crude oil continues to stress the Nation’s ability to safeguard against hazardous materials incidents. Several incidents in 2015 illustrate the growing risk of crude oil spills and fires resulting from train derailments. In February, 27 rail cars derailed in West Virginia, causing 19 tankers to catch fire and necessitating the evacuation of more than 100 residents from their homes. In March, 21 rail cars derailed in northern Illinois, spilling and igniting crude oil from at least five tanker cars. In November, 13 rail cars derailed in Wisconsin, spilling 1,000 gallons of crude oil into the Mississippi River and forcing the evacuation of 35 homes. For an analysis of new Federal initiatives to address such risks, as well as remaining challenges, see page 71.

Infectious Disease



In 2014, the Ebola virus disease epidemic in West Africa resulted in a coordinated international public health and medical response. U.S. efforts to contain the epidemic abroad—as well as enhance capabilities to identify, isolate, and treat anyone with the disease in the United States—were bolstered by congressional approval of \$5.4 billion in emergency funding in December 2014. Domestically, these funds supported progress in three key areas in 2015. First, the outbreak revealed that not every major U.S. hospital could build and sustain the capabilities to handle Ebola identification, biocontainment, and treatment. As a result, HHS has worked with state and local health officials to strategically build greater capabilities to manage infectious diseases in select hospitals. Funds have also gone toward the purchase of personal protective equipment at hospitals, as well as training on its proper use. Finally, Federal agencies such as DoD, the HHS Office of the Assistant Secretary for Preparedness and Response (ASPR), National Institutes of Health (NIH), and U.S. Food and Drug Administration are using the funds to accelerate development of diagnostics, vaccines, and therapeutics for Ebola. In addition, U.S. hospitals faced challenges disposing of Ebola-contaminated medical waste, highlighting waste management as a key concern and resulting in the formation of an interagency working group on waste management for biological agents. Page 73 provides additional analysis on progress in each of these areas.

Malicious Cyber Activity



Cybersecurity continued to be a major concern in 2015. In January, one of the Nation’s largest health insurers discovered that a cyber incursion had occurred, compromising the personally identifiable information of approximately 80 million people. Then, in April, OPM discovered the first of two separate, but related cybersecurity incidents. Specifically, OPM identified a compromise affecting personnel data from 4.2 million current and former Federal employees. In June, OPM, working with interagency partners including DHS, discovered that a second, earlier breach of its systems had compromised the personally identifiable information of more than 21.5 million individuals. Moreover, the second breach involved 19.7 million individuals who applied for a background investigation, which the Federal Government uses as the basis for making security clearance and suitability determinations. These events underscore challenges not only with protecting individuals’ data from cyber threats, but also for national security. For more details on these challenges and on recent efforts to improve cybersecurity, see pages 38, 39, and 40.

Severe Weather



Throughout 2015, several areas of the Nation experienced record-breaking events for severe weather. In late January, a destructive winter storm system hit New England, breaking snowfall records throughout the region and causing widespread power outages, statewide travel bans, damage to infrastructure, and flooding in coastal areas. Flooding was so severe in Scituate, Massachusetts, that the National Guard deployed to rescue residents from their homes, and authorities preemptively cut residential power to mitigate the risk of electrical fires. In May, severe storms broke previous rainfall records in Texas and led to heavy flooding in multiple areas of the state. More than 3,400 houses experienced major damage or were destroyed. Flash flooding also closed major highways and stranded motorists. In late December, a destructive storm system struck the southern and midwestern regions of the United States, resulting in tornadoes, widespread flooding, and blizzards. For the month of December, 2015 was the deadliest on record for tornadoes in more than 60 years. Several tornadoes touched down around the Dallas-Fort Worth metropolitan area, destroying homes and killing 11 people. Such severe weather underscores the need to pursue mitigation strategies for flooding and tornadoes. Page 59 presents new research on the benefits of various mitigation approaches.

Terrorist Attacks Involving Active Shooters



On July 16, a gunman attacked an armed-services recruiting center and a naval reserve facility in Chattanooga, Tennessee. As a result, four U.S. Marines and one U.S. Navy sailor died. FBI later concluded that the gunman was inspired by a foreign terrorist organization’s propaganda.

In response to the shootings, DoD is arming trained and qualified personnel at select DoD facilities located in local communities, conducting vulnerability assessments at off-installation facilities, installing access controls for recruiting centers, and exercising notification procedures for active-shooter scenarios. Nationally, to reduce casualties, law enforcement tactics for responding to active shooters are shifting away from containment efforts to engaging with the shooter, and programs such as Stop the Bleed are empowering the public to take basic actions to stop life-threatening bleeding. For more analysis on active-shooter preparedness, see page 47.

A second terrorist attack occurred on December 2, 2015. Two assailants fatally shot 14 people at a facility in San Bernardino, California. Nearly 300 officers from local, state, and Federal agencies were involved in the response. Afterward, San Bernardino County established a counseling center and hotline and enhanced security at other county facilities. Federal investigators found evidence of pre-planning for the attack and links to violent extremist ideology. Analysis on page 30 highlights the challenges in preventing attacks from self-radicalized individuals, as well as efforts to strengthen jurisdictions’ ability to address complex terrorist attacks.

Typhoons and Hurricanes



On August 2, Typhoon Soudelor became the strongest storm to hit the Commonwealth of the Northern Mariana Islands in 47 years. By strategically prepositioning support, FEMA and DoD addressed some of the logistic hurdles associated with the Commonwealth's distance from the continental United States and accelerated response efforts. DoD offloaded approximately 600,000 pounds of equipment and supplies. Moreover, Federal agencies, Commonwealth and local entities, and private-sector organizations installed emergency generators at critical facilities (e.g., wells) to ensure that residents had sufficient drinking water. In addition, HHS representatives assisted Commonwealth health officials with assessments of public health needs and provided data products regarding individuals with access and functional needs. Additional details on response efforts are provided on page 69.

In addition, on October 3, Hurricane Joaquin contributed to significant flooding in South Carolina. Historic levels of rainfall resulted in 32 dam breaches and closed 541 roads and bridges. The severe weather left nearly 30,000 residents without power, approximately 40,000 people without water, and hundreds in need of rescue. Responders included more than 1,300 National Guard troops, two FEMA Urban Search and Rescue teams, and swift-water rescue teams from South Carolina and other states. Hurricane Joaquin provided a major test of the dam infrastructure in South Carolina and indicated what can happen when structurally impaired dams are subjected to a major flooding event. For an analysis of the Nation's growing vulnerability to dam failures, see page 53.

Unaccompanied Children



Toward the end of 2015, the number of unaccompanied children attempting to cross the U.S. Southwest border surged. From October 2015 to December 2015, more than 17,000 attempts occurred. This amount, however, was less than the volume of attempted crossings during the peak three months of the 2014 surge. Moreover, the number of attempted crossings in January and February 2016 decreased significantly (compared to December 2015). To discourage crossings, Federal agencies intensified public awareness campaigns in Central America about the dangers of sending unaccompanied children to the United States and increased resources to dismantle smuggling organizations. A portion of new U.S. assistance to El Salvador, Guatemala, and Honduras is also contingent on these governments demonstrating positive steps toward informing citizens about the dangers of the journey to the United States; combating human smuggling and trafficking; improving border security; and facilitating the safe return, repatriation, and reintegration of undocumented migrants. See page 67 for details on Federal efforts for this latest surge of unaccompanied children. DHS continues to monitor trends and coordinate across Federal agencies to ensure an effective response to changes in migration flows.

Wildland Fires



In 2015, 68,151 wildland fires burned 10,125,149 acres across the Nation. This set a new record since 1960 for number of acres burned in a single year. Western states were particularly affected. More than half of the burned acres were in Alaska, which experienced one of the worst wildland fire seasons in its recorded history. Wildland fires in California burned more than 300,000 acres, nearly three times the state's five-year average.

Demands on wildland firefighting resources strained existing local, state, and Federal fire-suppression resources, causing states to seek out additional assistance. For example, the Tower Fire in Washington State prompted the first deployment of active-duty military personnel to assist in firefighting efforts since 2006. Demand for these alternatives will likely increase, as scientists predict larger, more intense wildland fires in the future because of climate change. See page 70 for additional analysis on climate change's influence on wildland fires and sources of assistance to bolster wildland fire response capabilities.



Cross-Cutting Finding: Planning; Public Health, Healthcare, and Emergency Medical Services; and Risk and Disaster Resilience Assessment are three core capabilities in which the Nation has developed acceptable levels of performance for critical tasks, but that face performance declines if not maintained and updated to address emerging challenges.

Each *National Preparedness Report* identifies a subset of the core capabilities as “capabilities to sustain.” To qualify as a capability to sustain, the Nation must show signs of proficiency in performing the critical tasks associated with the core capability. In addition, indicators must signal the risk of a growing gap between future demand and availability of resources for the core capability. Selection criteria for identifying capabilities to sustain include the report’s key findings on preparedness; State Preparedness Report results; data on the frequency of exercises and exercise performance; funding support; and future trends and drivers influencing preparedness.²

The 2016 *National Preparedness Report* presents three core capabilities as capabilities to sustain.

Planning



Planning spans all mission areas and focuses on conducting a systematic process that engages all relevant stakeholders in the development of strategic-, operational-, and tactical-level approaches to meet defined objectives. State and territory self-assessments have placed Planning among the top-ten-ranked core capabilities each year, with more than half of the ratings by states and territories in 2015 indicating proficiency in Planning. Emerging hazards (e.g., impacts of climate change), terrorist threats, and recent incidents, such as the avian influenza outbreak, highlight the dynamic environment for Planning and the continual need to sustain planning efforts. Despite being identified as an area of strength, more than 40 percent of states and territories still selected Planning as a capability making the most progress during the past year.

Public Health, Healthcare, and Emergency Medical Services



This Response core capability addresses providing lifesaving medical treatment and avoiding additional disease and injury through targeted public health, healthcare, and behavioral health support, services, products, and data. A diverse set of Federal assets exists to supplement state and local public health agencies and healthcare providers. Lessons learned from the 2014 Ebola virus disease outbreak resulted in further improvements in 2015 (see page 73). As highlighted in previous *National Preparedness Reports*, however, uncertainties in public health funding may pose challenges to sustaining public health capabilities. From 2014 to 2015, Public Health, Healthcare, and Emergency Medical Services experienced one of the largest one-year declines in self-assessments by states and territories among all core capabilities, indicating a growing gap.

Risk and Disaster Resilience Assessment



This Mitigation core capability focuses on conducting assessments that allow decision makers, responders, and community members to make informed actions to reduce their risk and increase their resilience. Recent assessments have refined preparedness stakeholders’ understanding of the benefits of mitigation activities, including use of green infrastructure, and the risks associated with climate change. However, outcome and performance measures are needed. Current uncertainties with identifying structurally deficient dams nationwide also underscore the need to periodically reassess risks and benefits to account for changing conditions such as aging infrastructure and evolving threats and hazards. See pages 53, 54, 59 and 61 for more analysis on these issues.

² Because existing datasets have not yet accounted for the 2015 refresh of the *National Preparedness Goal*, selections were based on the original 31 core capabilities identified in the 2011 *National Preparedness Goal* and applied to the core capability definitions in the 2015 refresh.

Cross-Cutting Finding: Cybersecurity, Economic Recovery, Housing, and Infrastructure Systems remain national areas for improvement. Two additional core capabilities—Natural and Cultural Resources, and Supply Chain Integrity and Security—emerged as new national areas for improvement.

Each year, the *National Preparedness Report* identifies national areas for improvement. Selection criteria include the report's key findings on preparedness; State Preparedness Report results; data on the frequency of exercises and exercise performance; funding support; and future trends and drivers influencing preparedness.

The 2016 *National Preparedness Report* identifies Cybersecurity; Economic Recovery; Housing; Infrastructure Systems; Natural and Cultural Resources; and Supply Chain Integrity and Security as national areas for improvement. With the exception of Supply Chain Integrity and Security, previous *National Preparedness Reports* have identified each of these core capabilities as areas for improvement. For Cybersecurity, Housing, and Infrastructure Systems, this represents the fifth consecutive year as areas for improvement.

Cybersecurity



This core capability focuses on protecting electronic communication systems, information, and services from damage, unauthorized use, and exploitation. Repeated, large-scale malicious cyber activity occurred across government and private-sector networks in 2015, demonstrating persistent challenges to achieving cybersecurity. Legacy systems and insufficient numbers of cybersecurity professionals continue to hinder the Nation's ability to secure ever-growing amounts of data, including sensitive, personally identifiable information. Despite increasing investment and focus on Cybersecurity, more states and territories rate themselves as lacking proficiency in it than in any other core capability. See pages 38, 39, and 40 for more analysis on these issues.

Economic Recovery



Through the Economic Recovery core capability, stakeholders seek to return economic and business activities to a healthy state and develop new business and employment opportunities that result in an economically viable community. Despite public- and private-sector efforts to promote economic resilience, issues such as the lack of inclusion of economic development professionals in pre-disaster planning by emergency managers (and vice versa) continue to hamper post-disaster economic recovery efforts (see page 86). This disparity in planning and capacity suggests a systemic disconnect between the preparedness community as a whole and the local experts who specialize in addressing economic- and workforce-development challenges. This lack of capacity is routinely identified in post-incident assessments and recovery exercises as a foundational necessity in managing post-disaster economic recovery issues. For the second year in a row, Economic Recovery had the second-lowest self-assessment ratings among all states and territories (only Cybersecurity was lower). Moreover, less than half of states and territories considered Economic Recovery a high priority, and 44 percent considered remaining capability gaps for Economic Recovery entirely or mostly a Federal responsibility. Economic Recovery has also experienced the largest decrease in self-assessment ratings among all core capabilities, dropping by seven percentage points from 2012 to 2015. While improving economic forecasts may alter outlooks, 20 percent of states and territories selected Economic Recovery as a core capability in greatest danger of future decline.

Housing



The Housing core capability addresses the implementation of housing solutions that effectively support the needs of everyone and contribute to the community's sustainability and resilience. Public-private collaborations have led to recent increases in accessible housing units for disaster survivors (see page 90). Broader, persistent challenges remain, however, in the Housing core capability. In 2015, more than half of the ratings by states and territories indicated a lack of proficiency in Housing, with no overall change from 2014 ratings. Outcomes of recent exercises and real-world incidents indicate that emergency managers continue to face challenges with assisting survivors in their transition from immediate sheltering to long-term housing solutions. This is especially challenging when seeking accessible housing solutions for survivors with disabilities.

Infrastructure Systems



This core capability seeks to stabilize critical infrastructure functions, minimize health and safety threats, and efficiently restore and revitalize systems and services to support a viable and resilient community. Aging and deteriorating infrastructure put pressure on available resources, making it difficult for owners to fund projects that make systems and structures more resilient against known vulnerabilities. In 2015 State Preparedness Report submissions, Infrastructure Systems was among the core capabilities that states and territories most frequently selected as in greatest danger of future decline. Emerging risks from climate change are also increasing demand for resilient infrastructure. While new mechanisms (e.g. EPA’s Water and Infrastructure Resiliency Finance Center) are helping to supply technical expertise and secure funds, remediating critical infrastructure vulnerabilities remains a challenge due to extensive needs nationwide and large investment demands. See page 89 for more analysis on this issue.

Natural and Cultural Resources



Natural and Cultural Resources focuses on protecting natural and cultural resources and historic properties through appropriate actions that preserve, conserve, rehabilitate, and restore them consistent with post-disaster community priorities and best practices, and in compliance with laws and executive orders. States and territories continue to consider Natural and Cultural Resources a low priority relative to other core capabilities. Similar to previous years, Natural and Cultural Resources was infrequently tested in exercises and received minimal amounts of FEMA preparedness (non-disaster) grant funding. As highlighted in this year’s *National Preparedness Report*, neglecting this core capability can have ramifications on disaster recovery, particularly for communities whose economies depend on natural resources (see page 88). Self-assessments by states and territories indicate a decrease in proficiency since 2012 to meet their targets for this core capability. Additional attention is needed to avoid further declines.

Supply Chain Integrity and Security



This core capability deals with strengthening the security and resilience of the supply chain. Less than 34 percent of the U.S. population resides in a jurisdiction that rated itself as proficient in this core capability. Aging infrastructure, just-in-time sourcing and increasing globalization of goods, and cybersecurity vulnerabilities (throughout the supply chain) present obstacles to protecting the Nation’s supply chains. In 2015, challenges encountered in distributing dangerous pathogens for research in medical countermeasures underscored the importance of redundant supply pathways and quality control processes. See page 44 for more analysis on this issue.

Advancing Progress in Previous National Areas for Improvement

The *National Preparedness Report* has identified the Housing and Infrastructure Systems core capabilities as national areas for improvement every year since 2012. To support progress in these areas, Federal agencies provide many forms of assistance to communities that can support delivering these capabilities. Table 1 identifies some of the broad challenges in delivering these capabilities identified in previous *National Preparedness Reports* and actions Federal agencies are undertaking to help address these challenges in the coming years.



Table 1: New and Ongoing Initiatives to Address Areas for Improvement in Housing and Infrastructure Systems

CHALLENGE	NEW AND ONGOING INITIATIVES FOR 2016 AND BEYOND
<p>Limited resources and investment capacity hinder the development of more resilient housing and infrastructure</p>	<p>New Federal programs offer resources to help communities build more resilient infrastructure systems and housing</p> <ul style="list-style-type: none"> ▪ HUD and the Rockefeller Foundation announced the winners of the National Disaster Resilience Competition in January 2016. Winners include eight states and five localities—New York City; New Orleans; Minot, North Dakota; Shelby County, Tennessee; and Springfield, Massachusetts—that will receive Federal disaster recovery funds totaling \$1 billion to support housing and infrastructure projects that build resilience. ▪ USACE is developing models for 30 reservoir basins in fiscal year 2016; these models will assist with real-time operation of the reservoir system and integrate with disaster preparedness and response planning. ▪ USDA's Rural Housing Service, Rural Utilities Service, and Rural Business-Cooperative Service continue to provide targeted housing and infrastructure improvements to rural communities through loans, grants, and technical assistance. These programs support essential facilities and services such as water and sewer systems, housing, health clinics, emergency service facilities, and electric and telephone service.
<p>The Nation continues to experience difficulty coordinating the delivery of Housing and Infrastructure Systems core capabilities across all levels of government and among overlapping programs and authorities</p>	<p>Federal agencies are refining and expanding relevant training, guidance, and exercises to improve operational and intergovernmental coordination</p> <p><i>Housing</i></p> <ul style="list-style-type: none"> ▪ HUD is developing a Housing Recovery Support Function concept of operations plan and, once finalized, will conduct public education and outreach to enhance coordination with state, tribal, territorial, and local governments, as well as private-sector stakeholders. <p><i>Infrastructure Systems</i></p> <ul style="list-style-type: none"> ▪ DHS is developing a cadre of critical infrastructure security and resilience subject-matter experts to support post-incident recovery operations. ▪ USACE will continue expanding its Field Coordinators Guide to improve its ability to provide post-disaster infrastructure support to affected jurisdictions. ▪ EPA is developing a drought response and recovery guide for water utilities to help build resilience for the water sector. ▪ DOE will engage with states to re-evaluate their Energy Assurance Plans through a series of exercises addressing previously identified gaps in energy infrastructure resilience. ▪ FEMA will deliver a new operating model for the Public Assistance program, which will improve its ability to deliver infrastructure aid to disaster-affected communities.
<p>Housing doctrine and plans are outdated or contain gaps that limit their usefulness in delivering housing support for real-world incidents</p>	<p>Federal agencies are developing new doctrine and plans to enable faster and more effective housing recovery support</p> <ul style="list-style-type: none"> ▪ FEMA is revising the 2012 Catastrophic Housing Annex, retitling it the Catastrophic Sheltering and Temporary Housing Concept of Operations, and will release the document as standalone, agency-level guidance on disaster sheltering and housing. The guidance will support FEMA's national and regional plans, and assist state and local partners with pre- and post-disaster planning for housing resources in all phases of a catastrophic disaster. This document reflects an all-hazards approach and follows the continuum of disaster housing from sheltering and temporary housing to sustainable housing. ▪ HUD and other Federal agencies are finalizing a new Federal Interagency Operational Plan to improve recovery support and coordination across the Federal Government, including the delivery of Housing assistance. ▪ FEMA is consolidating its housing-related policy and doctrine into a unified document that clarifies Individuals and Households Program information and eligibility, and facilitating information access for survivors and local communities about disaster housing support.

Cross-Cutting Finding: States and territories continue to be more prepared to achieve their targets for Response core capabilities, while they are least prepared to meet their targets in the Recovery mission area.

2015 State and Territory Self-Assessment of Preparedness Capability
Based on State Preparedness Report Results

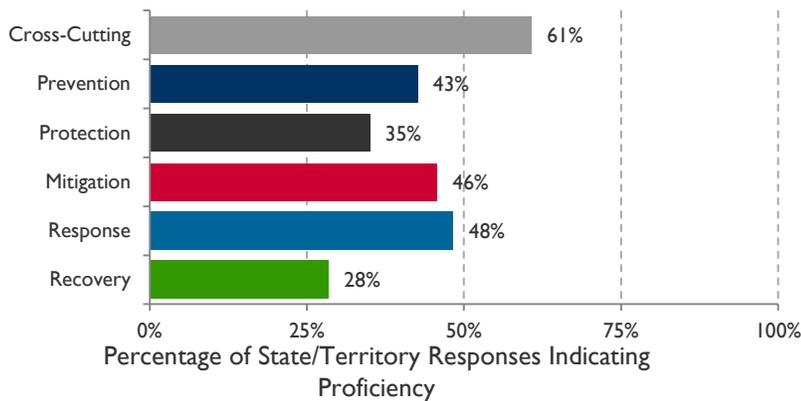


Figure 1: As in previous years, states and territories reported the highest capability ratings in the cross-cutting core capabilities and those within the Response mission area.

Through the State Preparedness Report, states and territories self-assess their preparedness for each core capability based on the unique targets they establish in their Threat and Hazard Identification and Risk Assessments. Using the State Preparedness Report’s 5-point scale (where 5 is the highest rating and ratings of 4 or 5 are considered proficient), states and territories assess core capabilities in five categories: planning, organization, equipment, training, and exercises. The 2015 ratings were generally consistent with prior years, with the highest ratings in cross-cutting core capabilities and in the Response mission area, and the lowest ratings in the Recovery mission area—although jurisdictions reported some modest changes (see Figure 1). Lower

ratings, such as those reported in the Recovery and Protection mission areas, highlight areas where states and territories are currently unable to meet their capability requirements.

The high-proficiency cross-cutting and Response mission area core capabilities are also the capabilities that states and territories allocate the greatest amount of DHS grant funding toward and exercise most frequently. From fiscal year 2012–2014, states and territories allocated 69 percent of grant funding to the cross-cutting capabilities and Response mission area. According to after-action reports that states and territories submitted to FEMA, the top-10 most frequently exercised capabilities from fiscal year 2012–2014 were either a cross-cutting capability or a Response core capability. Conversely, over the same period of time, states and territories allocated the least amount of grant funding to the Recovery mission area and exercised the Recovery mission area the fewest number of times relative to the other mission areas (see Figure 2).

From 2014 to 2015, states and territories reported capability increases in the Mitigation and Protection mission areas, as well as the cross-cutting core capabilities (see Figure 3). All four Mitigation core capabilities were among the top-seven core capabilities with the largest capability increases, indicating that states and territories have improved their ability to meet their Mitigation requirements. States and territories have also increased the amount of grant funding allocated to Mitigation core capabilities in recent years, from almost

Mission Area Comparison:
Funding Allocation vs. Proficiency vs. Frequency of Exercises

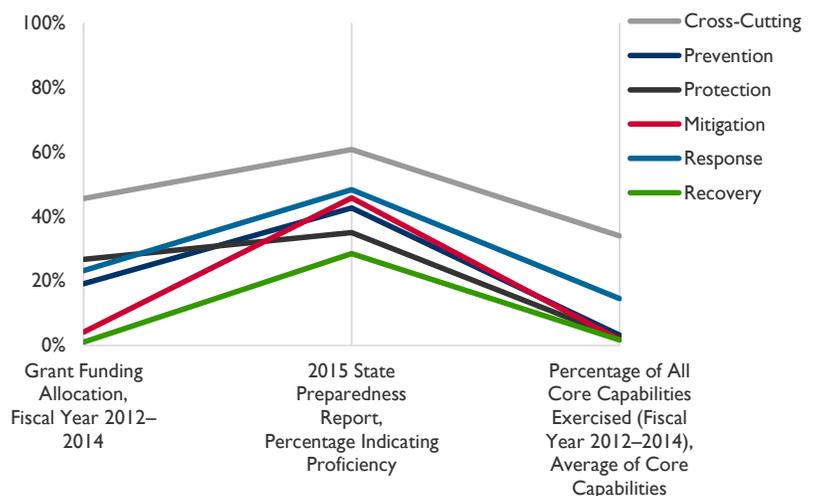


Figure 2: States and territories identify cross-cutting capabilities and the Response mission area as areas of strength in their self-assessments; they also allocate a large percentage of grant funding and frequently exercise these capabilities. Conversely, states and territories report low capabilities in the Recovery mission area; this mission area receives little grant funding and is rarely exercised.

\$36 million in fiscal year 2012 to over \$95 million in fiscal year 2014. In contrast, of the 15 core capabilities specific to the Response and Recovery mission areas, Infrastructure Systems was the only one to experience positive proficiency gains, increasing nearly three percentage points from 35 to 38 percent proficient. In taking a longer-term view, cross-cutting capabilities have shown the largest capability gains since 2012 (7.9 percent). In contrast, while receiving some of the highest capability ratings in 2012, the Response mission area has only slightly increased capability over the same period.



Change in State and Territory Capability Levels Based on State Preparedness Report Results

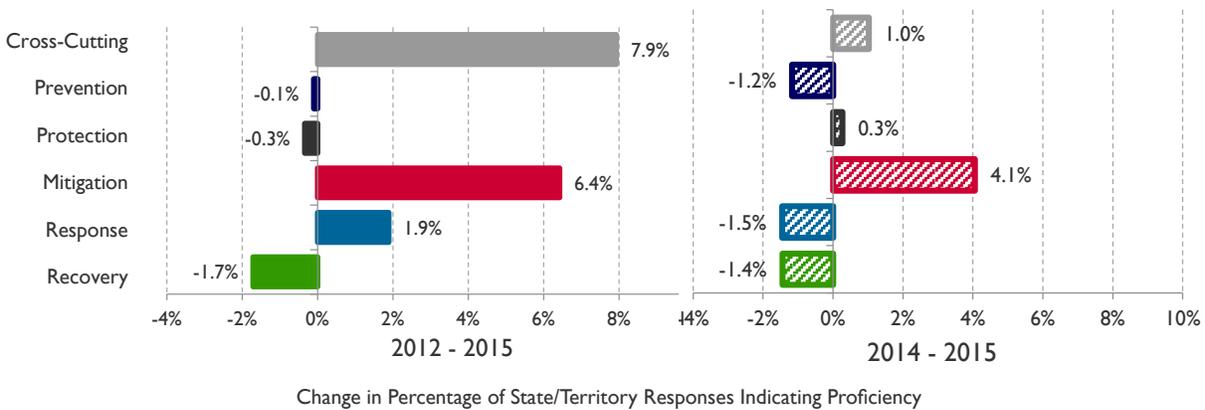


Figure 3: The change in state and territory self-assessments from 2014 to 2015 across mission areas reveals strong capability gains in the Mitigation mission area. Mitigation capability ratings have steadily increased since 2012.



At the core capability level, states and territories reported no change in the top- and bottom-rated core capabilities and only slight changes among the 10 highest- and lowest-rated core capabilities. The Threats and Hazards Identification core capability, which saw the greatest capability increase in 2015 (up nearly five percentage points from 52 to 57 percent), replaced Critical Transportation in the top-10 rated core capabilities. Both Health and Social Services and Risk Management for Protection Programs and Activities fell into the bottom 10 (see Figure 4). Operational Coordination remained the highest-rated core capability, with jurisdictions reporting 66 percent proficiency. States and territories reported little change in Cybersecurity, which remained the lowest-rated core capability for the fifth year in a row, with jurisdictions reporting only 13 percent proficiency.

2015 State and Territory Capability Levels Based on State Preparedness Report Results

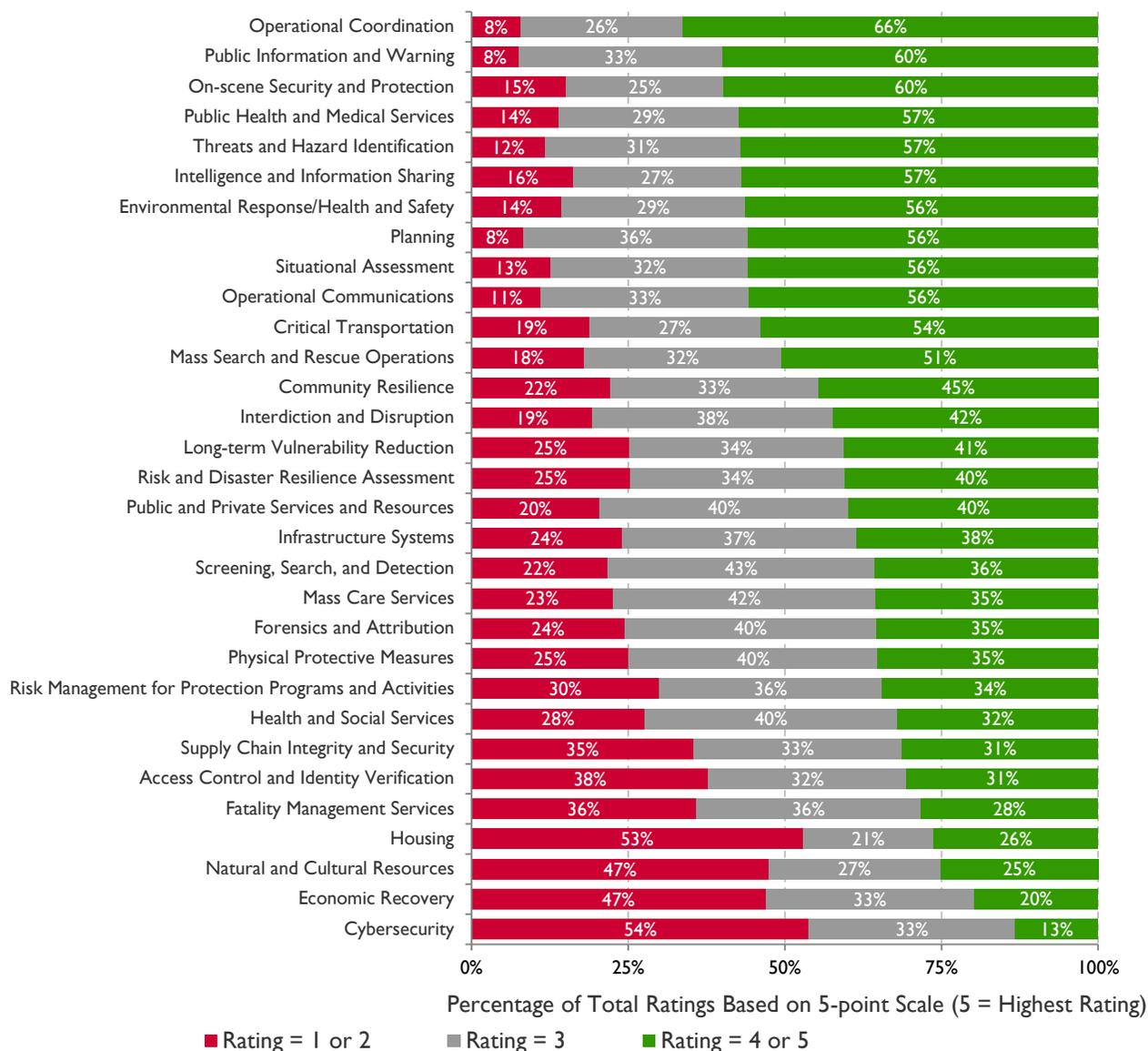


Figure 4: Although states and territories reported capability increases in 13 core capabilities, no change in two, and decreases in 16 from 2014 to 2015, the national core capability proficiency rankings were similar to previous years. Operational Coordination and Cybersecurity once again received the highest and lowest ratings, respectively. [Note: Due to rounding, some percentages may total slightly more or slightly less than 100 percent. Because existing datasets have not yet accounted for the 2015 refresh of the National Preparedness Goal, the core capabilities listed are based on the original 31 core capabilities identified in the 2011 National Preparedness Goal.]

Jurisdictions also reflect on the relative priority of core capabilities and their views on the Federal Government’s role in addressing their capability gaps in the State Preparedness Report. In 2015, priorities were consistent with previous years, and jurisdictions generally reported higher capability ratings for high-priority core capabilities. The two exceptions were Cybersecurity, fifth in priority and last in capability rating, and On-Scene Security and Protection, 18th in priority and third in capability rating. States and territories also reported stable views on their roles in addressing capability gaps, as they continued to report that the Federal Government should play a larger role in resource-heavy capabilities, such as Fatality Management Services, Housing, and Economic Recovery (see Figure 5). In addition, states and territories generally reported lower proficiency for capabilities in which they expect more Federal support; Fatality Management Services, Housing, and Economic Recovery were among the five lowest-rated capabilities overall.

State and Territory Views on Expected Roles in Addressing Capability Gaps Based on State Preparedness Report Results

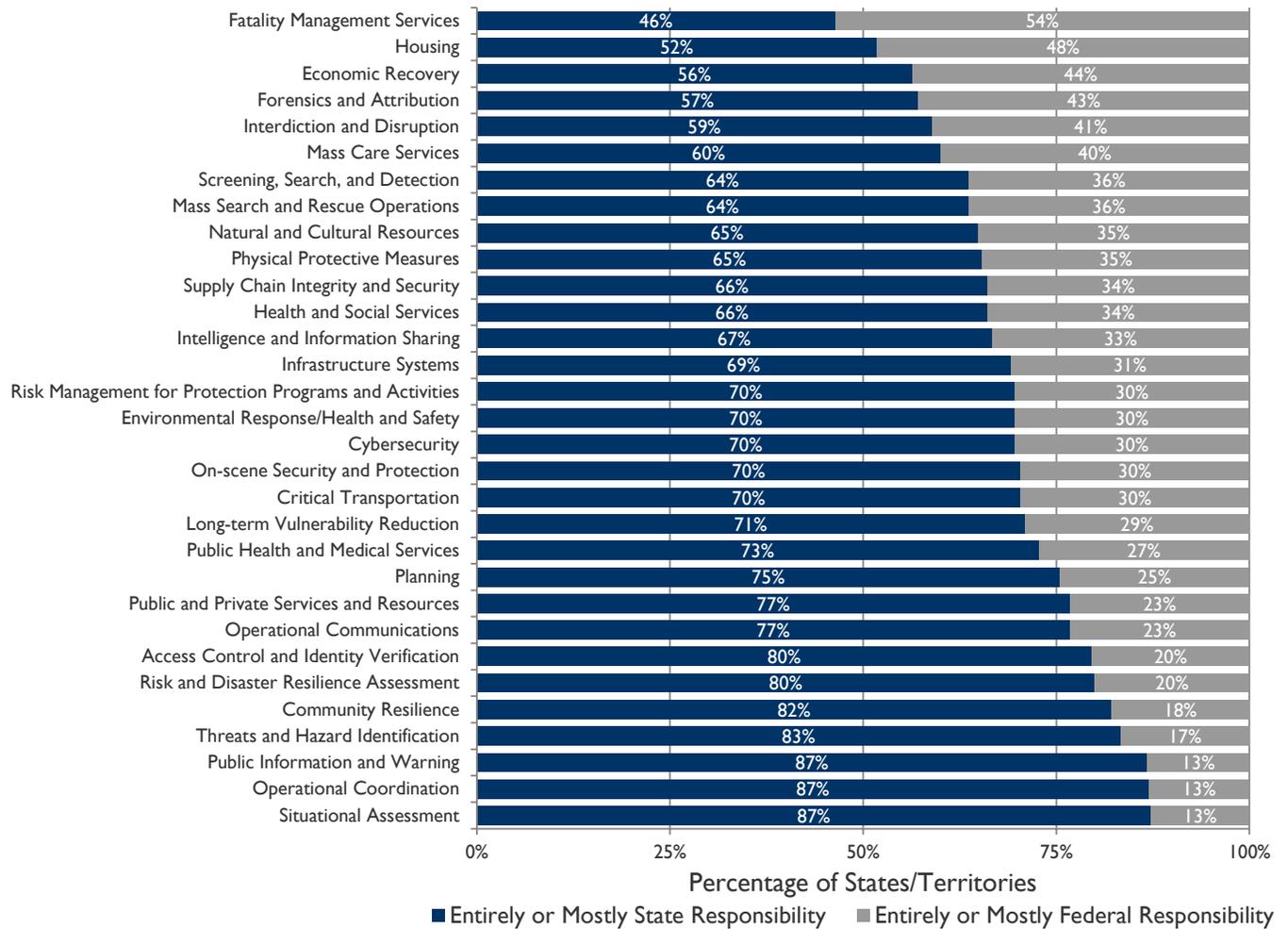


Figure 5: States and territories continue to report that addressing capability gaps is mostly or entirely the state’s responsibility for almost all core capabilities. However, a slight majority of states and territories report that they believe the Federal Government should address capability gaps in Fatality Management Services. [Note: Because existing datasets have not yet accounted for the 2015 refresh of the National Preparedness Goal, the core capabilities listed are based on the original 31 core capabilities identified in the 2011 National Preparedness Goal.]



..... Key Finding Highlights



- Terrorist attacks in 2015 highlight security challenges posed by self-radicalized individuals who are inspired by foreign terrorist organizations. (p. 30)
- State, local, tribal, and territorial governments continue to use Federal planning and training programs to enhance their capabilities to prevent radiological, nuclear, and explosives incidents. (p. 31)
- Nationwide, law enforcement and other personnel continue to use Federal exercise and training programs to strengthen capacities to detect and prevent imminent threats at large-scale public events. (p. 32)
- Federal, state, and local governments experience novel safety and security challenges posed by use of unmanned aircraft systems. (p. 32)

Core Capabilities in Practice

The Prevention mission area focuses on ensuring the Nation is optimally prepared to avoid, prevent, or stop an imminent terrorist attack within the United States. The *National Prevention Framework* (“Prevention Framework”) describes seven Prevention core capabilities, including how they interact during an imminent threat.

Being optimally prepared to prevent a terror attack in the United States begins with **Intelligence and Information Sharing**, which is the ability to develop situational awareness on the actor(s), method(s), means, weapon(s), or target(s) related to an imminent terrorist threat within the United States. Once an imminent threat has been identified, local, state, tribal, territorial, and Federal partners conduct **Screening, Search, and Detection** operations to effectively identify and locate terrorists and their means, methods, and weapons. Based on this knowledge, law enforcement officials carry out **Interdiction and Disruption** to help thwart emerging or developing terrorist plots and neutralize terrorist cells, operatives, and operations. Law enforcement should conduct their activities in a manner that preserves evidence and the Federal Government’s ability to prosecute those that violate the law. **Forensics and Attribution** is essential to identify terrorist actors, co-conspirators, and sponsors, and prevent initial or follow-on attacks.

The following are examples of actions taken in 2015 that highlight the relationships among the seven core capabilities in the Prevention Framework:

.....
CORE CAPABILITIES IN THE PREVENTION MISSION AREA

- Forensics and Attribution
- Intelligence and Information Sharing
- Interdiction and Disruption
- Operational Coordination
- Planning
- Public Information and Warning
- Screening, Search, and Detection

Intelligence and Information Sharing, and Public Information and Warning

The Office of the Director of National Intelligence (ODNI) and the U.S. Department of Justice (DOJ) completed efforts in November 2015 to discontinue the collection of bulk telephone metadata, helping to strengthen citizen privacy protections. In addition, ODNI has posted more than 250 declassified documents to its website to promote transparency regarding intelligence-collection programs.

To increase public awareness of indicators of terrorism and terrorist-related crime, DHS provided new web-based messaging materials and mobile applications for its “If You See Something, Say Something” campaign. During the 2015 Super Bowl in Glendale, Arizona, the Federal Government collaborated with state, local, and private-sector partners to promote the campaign’s messaging to over 100,000 fans and visitors.

Additionally, DHS Intelligence Officers and Reports Officers continued serving as a critical link between state and local partners and the Intelligence Community and other DHS components. These officers disseminated thousands of intelligence products in 2015. For example, on May 3, 2015, two individuals opened fire at an event in Garland, Texas. Weeks before the attack, DHS officers assigned to fusion centers in Texas shared threat information about social-media posts calling for “lone wolf” attacks at the event. Closer to the event, the DHS Office of Intelligence and Analysis issued a report outlining new, specific threat information, which local law enforcement authorities used to shape their security for the event.

Interdiction and Disruption, and Planning

In 2015, the number of Americans thought to have traveled or attempted to travel to join violent extremist groups fighting in Syria increased from over 100 in 2014 to more than 250 persons. These individuals could potentially return and conduct terrorist attacks in the United States. Moreover, increasing use of encrypted electronic communications is creating additional challenges for Federal, state, and local law enforcement to monitor and disrupt malicious activities. DOJ established the Domestic Terrorism Counsel to help the U.S. Attorneys identify legal gaps and trends to shape the Nation’s legal strategy to combat threats of domestic terrorism.

Federal agencies are also establishing new entities to prevent violent extremism. In September 2015, DHS created the Office for Community Partnerships to build relationships and support local communities that seek to discourage violent extremism and undercut terrorist narratives. Its director oversees a working group responsible for policy formation, strategic planning, and coordination activities related to countering violent extremism. In January 2016, DHS and DOJ established the Countering Violent Extremism Task Force, whose mission is to manage the synchronization and integration of a whole-of-government effort to empower local partners to prevent violent extremism in the United States. Countering violent extremism spans both Prevention and Protection mission areas—for additional analysis, see page 46.

Meanwhile, Federal agencies such as CBP, the U.S. Immigration and Customs Enforcement, and the U.S. Coast Guard (USCG) continue to maintain capabilities to interdict threats from land, sea, or air as they move toward or across U.S. borders. For example, the USCG Maritime Security Response Team provides advanced counterterrorism skills and tactics such as high-speed intercept and maritime radiological and explosives detection. In 2015, USCG implemented the Risk-based Maritime Security and Response Operations initiative, which adjusts how ports prioritize operations and use assets to maximize risk reduction.

Forensics and Attribution, Intelligence and Information Sharing, and Interdiction and Disruption

In fiscal year 2015, the U.S. Secret Service trained over 1,100 state and local law enforcement officers, prosecutors, and judicial officials, allowing them to complete over 17,100 computer forensic examinations (inspecting over 5 million gigabytes of data). In addition, fusion centers continued to increase their accuracy in analyzing intelligence to refine investigative leads—225 out of 6,959 suspicious activity reports submitted to FBI aided in an investigation or helped identify or interdict individuals on the Terrorist Screening List.

Screening, Search, and Detection and Operational Coordination

To augment radiological and nuclear detection capabilities for designated special events—such as the Super Bowl, Papal Visit, and Indianapolis 500—the DHS Domestic Nuclear Detection Office (DNDO) deployed mobile detection units 81 times, to supply radiation detection equipment for up to 40 first responders. During the Papal Visit, DHS’s BioWatch Program, which detects and provides early warning of bioterrorism incidents, facilitated the collection and testing of over 750 samples to quickly detect potential biological threats.



National Network of Fusion Centers

The 2012 *National Preparedness Report* highlighted DHS efforts—through training, technical assistance, and deployment of personnel—to enhance the capabilities of the National Network of Fusion Centers. In 2015, continued support from DHS and other interagency partners enabled the National Network to achieve its highest standards for collecting and sharing intelligence with fusion center customers.

Joint Counterterrorism Awareness Workshops

These workshops—sponsored by the National Counterterrorism Center, DHS, and FBI—train jurisdictions to prevent and respond to complex terrorist attacks. The cumulative number of workshops has increased from 6 in 2011 to 22 in 2015.

“If You See Something, Say Something”

Since 2012, this campaign has continued to raise public awareness of indicators of terrorism and terrorism-related crime. In 2015, DHS launched new web-based messaging materials and mobile applications to increase public awareness and help citizens more easily report suspicious activities to law enforcement.

BY THE NUMBERS

73 IMPROVISED EXPLOSIVES

SECURITY TRAININGS

The FEMA Center for Domestic Preparedness and the DHS Office for Bombing Prevention delivered 73 courses on improvised explosives security, training 1,763 emergency response professionals on bombing prevention and response actions for improvised explosive devices.

268 INTELLIGENCE PRODUCTS

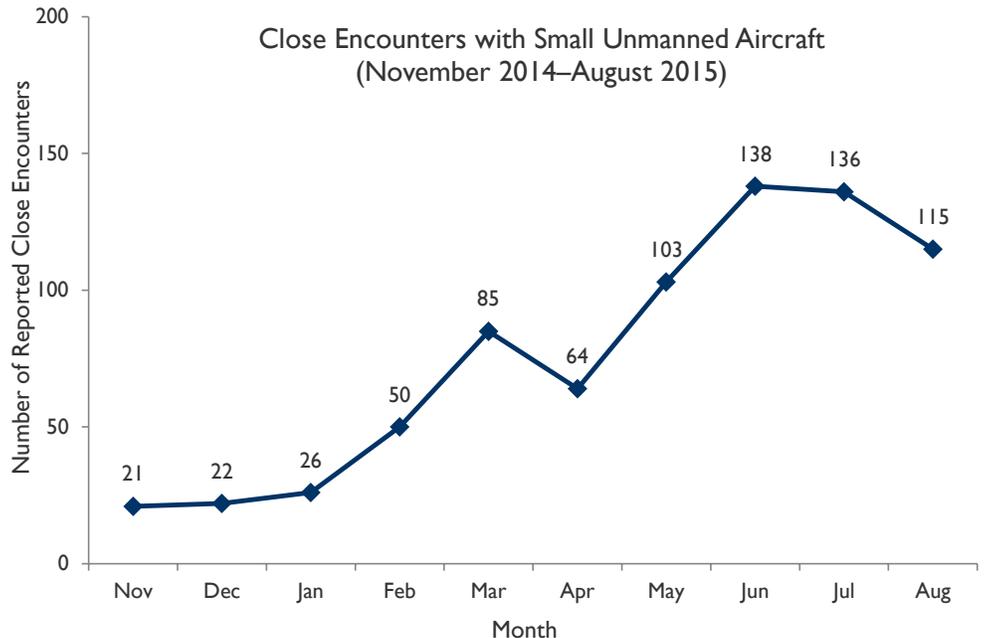
FBI produced 268 intelligence products for special events (e.g., high-profile meetings; dignitary visits), including five National Special Security Events and two International Special Security Events.



PREPAREDNESS TRENDS AND FIGURES

Increasing Use of Small Unmanned Aircraft Systems

In 2015, the Federal Aviation Administration (FAA) released nationwide data on the rising number of incidents involving small unmanned aircraft systems, which highlight the preparedness challenges these systems present to securing airspace and physical infrastructure (discussed further on page 32). From November 2014 to August 2015, FAA received more than 700 reports from pilots and air-traffic personnel of unmanned aircraft system sightings. The number increased from 20 reports of sightings in November 2014 to more than 100 per month between May and August 2015. Moreover, the majority of sightings occurred above FAA’s recommended 400-foot ceiling for small unmanned aircraft systems, increasing the risk of collisions with other aircraft flying at low altitudes.



PREPAREDNESS SNAPSHOTS



UNIVERSITY OF MARYLAND

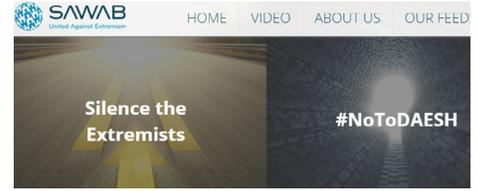
Researchers from the University of Maryland's National Consortium for the Study of Terrorism and Responses to Terrorism, with support from the DHS Science and Technology Directorate and the National Institute of Justice, released preliminary findings from a database (named Profiles of Individual Radicalization in the United States) to help policymakers and law enforcement personnel understand common indicators of domestic violent extremist radicalization. The project identifies the key indicators of radicalization for over 1,500 U.S.-based individuals. Analysis of this data will



help researchers understand pathways to radicalization.

ERIE COMMUNITY COLLEGE

In partnership with the Transportation Security Administration (TSA), Erie Community College in New York State designed a homeland security training program specifically for TSA officers. The online program trains officers in intelligence analysis and counterterrorism to enhance the detection of threats to airport security. In 2015, 150 TSA officers from 38 different airports completed the training program. This is one of more than 30 partnerships that TSA has



established with institutions of higher education to provide classes at all federalized airports, as well as distance learning.

U.S. DEPARTMENT OF STATE AND UNITED ARAB EMIRATES

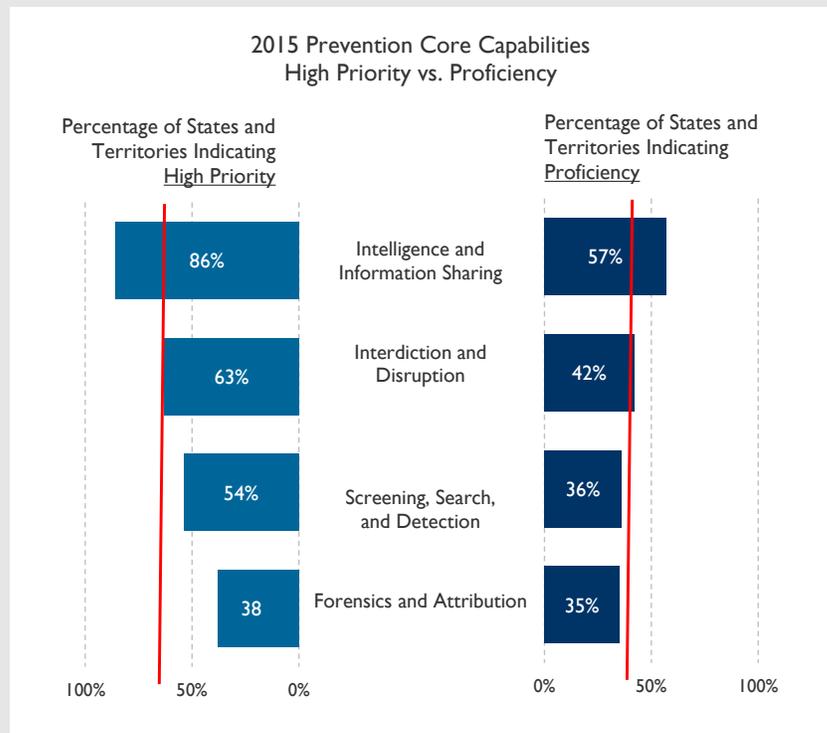
The U.S. Department of State and the United Arab Emirates launched the Sawab Center in July 2015, which is the first multinational online messaging and engagement program designed to counter terrorist propaganda, such as messaging that is used to recruit foreign fighters, fundraise for illicit activities, and intimidate and terrorize local populations.

STATE PERSPECTIVES ON PREPAREDNESS

2015 State Preparedness Report Results

- Prevention core capabilities with higher priority ratings had higher proficiency ratings.
- States and territories identified Intelligence and Information Sharing as their sixth-highest-rated capability, making it the only Prevention capability to fall in the top 10 overall.
- In 2015, states and territories reported increased gaps in anti-terrorism operations, up seven percentage points from 2014 to 53 percent.

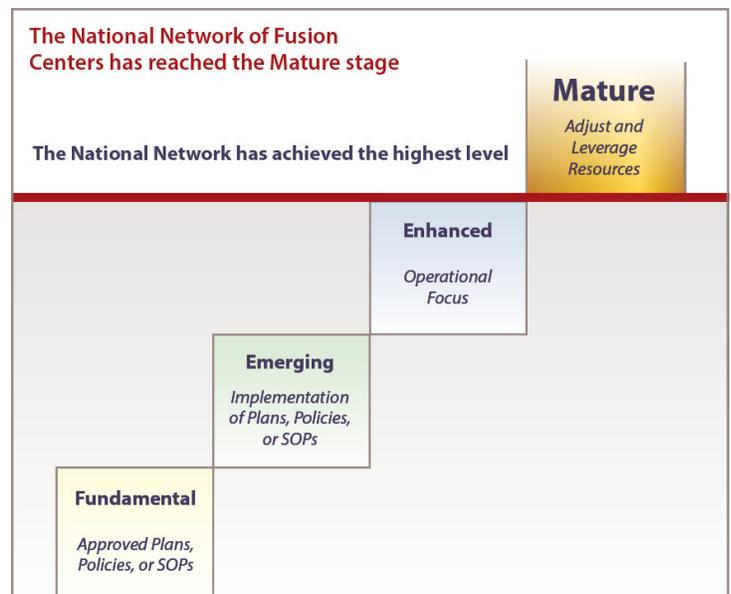
Notes: Vertical red lines (|) indicate the average rating for all core capabilities. The chart and statements do not include contributions from the three cross-cutting core capabilities—Planning, Operational Coordination, and Public Information and Warning.



KEY FINDINGS

Key Finding: In 2015, the National Network of Fusion Centers continued to enhance its intelligence-collection and information-sharing capabilities, enabling fusion centers to better integrate resources to prevent potential threats of terrorism.

In 2015, fusion centers in states and major urban areas—collectively, the National Network of Fusion Centers—continued to collect, analyze, and share threat-related information to help Federal, state, tribal, territorial, and local law enforcement prevent potential threats of terrorism. Each year, DHS evaluates the maturation of the National Network of Fusion Centers as a whole. The evaluation ranks the maturity of 46 specific capabilities to four increasing stages of maturity—fundamental, emerging, enhanced, and mature. For the National Network of Fusion Centers to progress through each stage, 75 percent of the Nation’s fusion centers must achieve all of the attributes associated with that stage. In 2015, based on this information, the National Network of Fusion Centers assessed itself as reaching the mature stage overall. By reaching the mature stage, the National Network of Fusion Centers now has the full capacity to integrate resources among individual fusion centers to share intelligence across all levels of government.



In 2015, fusion centers also continued to strengthen their capabilities to prevent potential threats in several key areas:

- **Standardized analytic processes:** Fusion centers increased the amount of analysis products tagged (i.e., categorized) to Homeland Security Standing Information Needs—indicators that an intelligence product relates to established topics of interest and that help Federal, state, and local intelligence customers efficiently research and retrieve analytical products. The percentage of fusion centers tagging products to Homeland Security Standing Information Needs increased from 71 percent in 2014 to 79 percent in 2015.
- **Requests for information:** Fusion centers increased their response to requests for information to enhance the FBI’s Terrorist Screening Center watch list—a database identifying information about known or suspected terrorists. In 2015, fusion centers responded to 75 percent of requests, up from 64 percent in 2014.
- **Information-sharing portals:** DHS’s Homeland Security Information Network Intelligence Community of Interest is the most common sensitive-but-unclassified system used for information-sharing and analytic collaboration among fusion centers. In 2015, 56 percent of fusion centers used the Homeland Security Information Network Intelligence Community of Interest as their primary system to share information with other fusion centers and Federal partners, an increase from 44 percent in 2014.

In a 2015 survey of key Federal, state, and local fusion center customers, the DHS Office of Intelligence and Analysis found that 84.9 percent thought the fusion center products they received were relevant (up from 77.9 percent

in 2014), and 79.3 percent thought that the products were generated in a timely fashion to support mission needs (up from 72.7 percent in 2014). The continued improvement of fusion center products enables more efficient law enforcement investigations to help interdict potential threats of terrorism.

Key Finding: The terrorist attack in San Bernardino, California, highlights challenges in detecting and preventing attacks from self-radicalized individuals who are inspired by foreign terrorist organizations, even as Federal, state, and local agencies have taken steps to strengthen the Nation’s ability to address such attacks.

On December 2, 2015, homegrown violent extremists conducted a terrorist attack in San Bernardino, California, demonstrating the challenges for law enforcement to detect and prevent attacks by self-radicalized individuals. A married couple shot and killed 14 people and wounded 26 others at an office party at the Inland Regional Center in San Bernardino. According to FBI, the couple had been discussing an attack for at least two years and was radicalized before their marriage in 2014. This terrorist attack highlights the difficulty law enforcement officers face in identifying and uncovering these plots, as such individuals often work alone or in small groups. While highly organized terrorist plots may involve years of planning, plots by the self-radicalized can be more opportunistic and nimble.

Throughout 2015, Federal, state, and local jurisdictions took steps to strengthen their ability to address complex terrorist attacks. Over 500 jurisdictions participated in FEMA’s Joint Counter Terrorism Awareness Workshops, and nearly 21,000 individuals completed counterterrorism-related training through the National Domestic Preparedness Consortium. These workshops and trainings help law enforcement personnel, emergency managers, hospital officials, and private-sector partners identify challenges in preparing for terrorist attacks, such as the one in San Bernardino in December and the attacks in Paris in November that killed 129 people and injured more than 350 others. Common challenges identified include a lack of training for public safety officials on how to properly share threat information during complex incidents, such as providing information to private-sector entities involved in the incident. In addition, workshop participants determined the need to improve exercises to test coordination between incident command posts and emergency operations centers. Jurisdictions also identified a lack of medical training to handle complex injuries resulting from a terrorist attack and the need for improved hospital security when targeted by such attacks.

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**PREPAREDNESS CASE STUDY:
URBAN SHIELD LARGE-SCALE
TRAINING PROGRAM**
.....

Every year since 2007, the Bay Area Urban Areas Security Initiative has conducted the Urban Shield Full-Scale Exercise to provide a complex, large-scale training experience for fusion centers, law enforcement, and emergency managers. In the months prior to each exercise, participants from over 50 local jurisdictions and 16 state and Federal agencies participate in planning meetings and training workshops to identify preparedness challenges for interdicting and disrupting potential terrorist threats. Jurisdictions address the challenges by developing complex terrorist attack scenarios for the annual exercise that require collaboration among Federal, state, and local partners.



Key Finding: The Federal Government continued efforts to enhance the Nation’s capabilities to prevent radiological, nuclear, and explosives incidents.

In 2015, DHS DNDO continued expanding the Securing the Cities initiative, which increases the Nation’s capability to detect and protect against radiological and nuclear threats by providing high-risk metropolitan areas with training, exercises, and equipment. DNDO added its fourth metropolitan area, Houston, in September. Securing the Cities is now active in the New York/Jersey City/Newark area, the Los Angeles/Long Beach area, the National Capital Region, and Houston. Expanding the program allows DNDO to further reduce risk in major metropolitan areas. Securing the Cities now covers 52 million people, up from 23 million people in 2014 (as reported in the 2015 *National Preparedness Report*). As of December 2015, DNDO has funded the purchase of more than 18,000 pieces of radiation detection equipment, trained more than 19,000 personnel, and conducted over 200 drills on the use of radiation detection equipment.



In addition to expanding the Securing the Cities initiative, the Federal Government continued training and assisting state, tribal, territorial, and local partners in planning for and detecting radiological, nuclear, and explosive materials. Federal training and assistance programs help jurisdictions to identify and compare best practices in order to mature their capabilities to prevent radiological, nuclear, and explosives incidents.

- FBI and DOE trained 423 Federal, state, and local emergency responders through four Radiological Transportation Security Tabletop Exercises to improve situational awareness during incidents involving radiological and nuclear materials in transit. The exercises identified the need for greater information sharing between transportation stakeholders and state and local law enforcement to provide additional notification, including specific logistics, concerning materials transported through jurisdictions to help prepare for potential incidents.
- The FBI Hazardous Devices School—the Nation’s authority for accrediting bomb squads—developed and delivered “Manual Techniques for Improvised Explosive Device Defeat” to 48 Federal, state, and local partners in fiscal year 2015. This is one of several courses the school offers. In addition, FBI trained 66 partners through five Tactical Bomb Technicians Courses.
- DNDO supported 21 Preventative Radiological and Nuclear Detection exercise events and trained 3,100 state and local personnel across 12 states. DNDO will share lessons learned from the exercises at the 2016 Nuclear Security Summit.
- The FEMA Center for Domestic Preparedness and the FEMA Radiological Emergency Preparedness Program trained 835 emergency response professionals through 55 community preparedness courses relating to nuclear power plants.
- The DHS Office for Bombing Prevention helped the State of Texas develop a Bomb Making Materials Awareness Program to increase point-of-sale employee awareness and suspicious activity reporting to prevent illicit acquisition and use of explosive precursor chemicals. Texas and the Office for Bombing Prevention trained 15 law enforcement and emergency management agencies to deliver the training across the state.



Key Finding: Nationwide, federally supported exercise and training programs continue to strengthen law enforcement’s capacity to detect and prevent imminent threats that may exist at large-scale public events.

Large-scale public events, which involve sizeable crowds and potential high-profile targets, often present elevated risks of terrorism and require increased personnel and resources to secure. For example, the 2015 Papal Visit—designated as a National Special Security Event—drew millions of people to public venues in Washington, DC; New York City, and Philadelphia. To prepare these jurisdictions, Federal agencies provided training to local law enforcement personnel that focused on preventing imminent threats. For example, FEMA and NNSA delivered advanced training on radiological and nuclear detection for 122 individuals to help the Boston Fire Department use detection equipment to identify and thwart potential threats during the 2015 Boston Marathon. Additionally, the U.S. Secret Service trained 3,152 Federal personnel and conducted five exercises (involving 707 participants from Federal, state, and local agencies) on coordinating large-scale crowd security for the Papal Visit and the United Nation’s General Assembly meeting.



NATIONAL SPECIAL SECURITY EVENTS

A National Special Security Event is a significant national or international event that DHS determines to be a potential target for terrorism or criminal activity. In 2015, Federal, state, and local law enforcement provided security for four National Special Security Events (three more than in 2014, and the most since 2012). The events included the President’s State of the Union Address and each of the three Papal Visits to Washington, DC; New York City, and Philadelphia.

Furthermore, large-scale sporting events, such as National Football League games, present crowded, high-profile venues for terrorist attacks. Prior to the 2015 National Football League season, FBI conducted tabletop exercises at each of the league’s 31 stadiums, involving more than 1,200 Federal, state, local, and private-sector personnel. Participants identified 124 security practices to strengthen threat-identification and information-sharing capabilities to prevent imminent threats. Due to the program’s success, several Major League Baseball stadiums and National Hockey League arenas adopted the exercise. FBI will continue expanding its exercise and training engagements with professional sports leagues in 2016.

Key Finding: Use of small unmanned aircraft systems presents novel challenges to security, creating an avenue for terrorists to threaten airspace and physical infrastructure.

Federal, state, and local governments experienced new preparedness challenges as the nationwide demand for small unmanned aircraft systems (unmanned aircraft systems weighing less than 55 pounds) continued to rise in 2015. In July 2015, the Consumer Electronics Association projected that users of small unmanned aircraft systems would



purchase approximately 700,000 devices by the end of 2015, a 63 percent increase from 2014. Additionally, small unmanned aircraft systems technology continues to advance, with devices able to fly at higher altitudes over longer distances and periods of time. This increased use and the expanding capabilities coincide with an increase in the number of incidents that may place individuals (in the air and on the ground) and property at risk, and may threaten airspace and physical infrastructure security. As of November 2015, FAA received over 1,100 aircraft pilot and air traffic reports of unauthorized and potentially unsafe operations of unmanned aircraft systems, compared to 238 incidents in all of 2014. Moreover, in 2015, the U.S. Secret Service responded to three incidents in which small unmanned aircraft systems were flying in areas where flight operations were restricted or prohibited, including a small unmanned aircraft system that crashed on White House grounds and triggered a brief lockdown. These incidents suggest vulnerabilities to potential terrorist threats, which may include

using small unmanned aircraft systems to disrupt or damage aircraft through midair collisions and the potential to equip small unmanned aircraft systems with explosives or other harmful devices.

Mission Area Connections

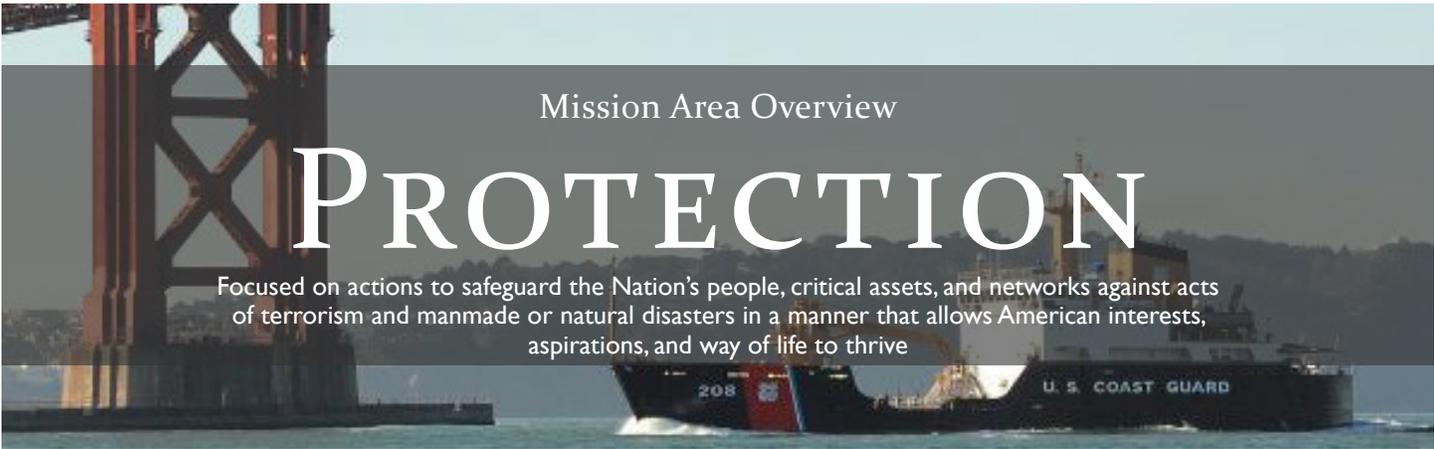


Increasing Use of Small Unmanned Aircraft Systems

Small unmanned aircraft systems can pose risks to responder safety. Firefighting aircraft (e.g., airtankers, helicopters) fly at low altitudes similar to those flown by small unmanned aircraft systems, creating the potential for mid-air collisions. In July 2015, the presence of several small unmanned aircraft systems at the site of the North Fire in California forced officials to ground all aircraft, disrupting wildland fire suppression efforts.

Government and industry partners are taking measures to address the emerging challenges and potential threats associated with increased use of small unmanned aircraft systems. FAA, state and local governments, and industry partners have conducted outreach through the “Know Before You Fly” and “No Drone Zone” campaigns to promote the safe and responsible use of small unmanned aircraft systems. The campaigns educate users of small unmanned aircraft systems on airspace restrictions, statutory requirements, and recommended flying procedures—such as not flying above 400 feet or over sensitive infrastructure or property—to prevent potential incidents. Additionally, FAA released a smartphone application called “B4UFLY” in January 2016 to provide small unmanned aircraft systems operators, particularly model aircraft hobbyists, with situational awareness about restrictions or requirements in effect at their current or planned flight location. In October 2015, FAA announced that it will require small unmanned aircraft systems users to register their aircraft with the Federal Government prior to operations in the National Airspace System. FAA created a task force to develop recommendations for a small unmanned aircraft systems registration process and published an interim final rule in the Federal Register on December 16, 2015, with an effective date of December 21, 2015. This rule provides a less burdensome, web-based alternative for operators to register their small unmanned aircraft systems, instead of the registration process that applies to manned aircraft.





Mission Area Overview

PROTECTION

Focused on actions to safeguard the Nation’s people, critical assets, and networks against acts of terrorism and manmade or natural disasters in a manner that allows American interests, aspirations, and way of life to thrive

..... Key Finding Highlights



- Cybersecurity continues to affect public and private sectors, as breaches threaten Federal and private networks and states increase investments in cyber countermeasures. (p. 38, 39, 40)
- The Nation faces obstacles to securing critical infrastructure and ensuring supply chain resilience across a variety of sectors, including transportation, chemicals, and biomedical research. (p. 42, 43, 44)
- As the threat of terrorism persists and evolves, Federal, state, and local agencies have continued to expand partnerships for countering violent extremism. (p. 46)

Core Capabilities in Practice

The Protection mission area secures the homeland against acts of terrorism and manmade or natural disasters. The *National Protection Framework* (“Protection Framework”) describes 11 Protection core capabilities, including how they operate together to safeguard the Nation against all hazards. Critical infrastructure protection, from the cyber to the physical, plays a central role in the mission area, compounded by the unique risks of aging systems. The second edition of the *National Preparedness Goal*, released in September 2015, directs greater attention toward several threats, two of which hold particular implications for infrastructure: cybersecurity and climate change.

Protecting the Nation requires understanding the threat environment, which is accomplished through **Intelligence and Information Sharing** (the collection and distribution of timely, accurate, and actionable data). Through a process of **Risk Management for Protection Programs and Activities**, officials evaluate the likelihood of a given type of threat against an asset, individual, or event. Once a threat vector is identified and its risk understood, emergency managers disseminate **Public Information and Warning**, as needed. Steady-state protection operations—those conducted regardless of knowledge of an imminent attack, such as airport security—are routinely informed by the intelligence and risk-management cycles. These operations include **Screening, Search, and Detection**, and **Interdiction and Disruption** activities, and are conducted using **Operational Coordination** structures to integrate all relevant stakeholders.

Public and private stakeholders apply the remaining steady-state core capability measures, as appropriate. **Access Control and Identify Verification**, for example, controls admittance to critical locations and systems, and is essential for both **Cybersecurity** and **Physical Protective Measures**. **Supply Chain Integrity and Security** helps strengthen the resilience of the Nation’s critical supply chains from

..... CORE CAPABILITIES IN THE PROTECTION MISSION AREA

- Access Control and Identity Verification
- Cybersecurity
- Intelligence and Information Sharing
- Interdiction and Disruption
- Operational Coordination
- Physical Protective Measures
- Planning
- Public Information and Warning
- Risk Management for Protection Programs and Activities
- Screening, Search, and Detection
- Supply Chain Integrity and Security

intentional disruptions or natural hazards. Government officials and private and nonprofit organizations implement all the above capabilities aligned with procedures identified during the **Planning** process, which are then tested and refined during relevant exercises.

The Protection Framework also addresses the need to secure public and private networks and critical infrastructure. The following are examples of actions taken in 2015 that highlight the relationship among a select number of the 11 core capabilities in the Protection Framework:

Planning

In 2015, the DHS National Protection and Programs Directorate (NPPD) coordinated an update of the Sector-Specific Plans in each of the 16 critical infrastructure sectors. The plans guide and integrate sector-specific efforts to secure and strengthen resilience, as well as each sector's broader contributions to national critical infrastructure security, as outlined in *Presidential Policy Directive 21: Critical Infrastructure Security and Resilience*. The updated plans emphasize topics such as the nexus between cyber and physical security; interdependencies among the sectors; and risks associated with climate change and aging and outdated infrastructure. More broadly, efforts to finalize and release a Federal Interagency Operational Plan for the Protection mission area continue to lag. A requirement of *Presidential Policy Directive 8: National Preparedness*, the *Protection Federal Interagency Operational Plan* will describe the concept of operations for integrating and synchronizing Federal capabilities to support state, tribal, territorial, and local protection efforts.

Access Control and Identity Verification, and Cybersecurity

In fiscal year 2015, DHS received and responded to 20 percent more incidents—295 compared to 245 in fiscal year 2014—related to malicious cyber activity against industrial control systems (as reported by asset owners and incident partners).

Intelligence and Information Sharing, and Operational Coordination

In 2015, the City of Los Angeles launched the Integrated Security Operations Center, the Nation's first city-wide monitoring and intelligence-sharing platform for cyber threats. The operations center evaluates an average of 30,000 cyber threats per day against the city's network and provides actionable intelligence reports to regional stakeholders.

Planning, and Risk Management for Protection Programs and Activities

Given the potential effects of extreme weather on infrastructure, all levels of government have collaborated to validate, calibrate, and enhance risk assessments to incorporate climate change. The U.S. Department of the Interior (DOI) U.S. Geological Survey (USGS) developed the Coastal Storm Modeling System to help evaluate and manage preparedness resources in coastal communities. In addition, multiple levels of government collaborated in climate and infrastructure tabletop exercises in Maine and Florida in 2015. Efforts like these help practitioners to design exercises and to determine risk reduction strategies, protection planning priorities, and mitigation projects to help advance preparedness across mission areas.

Supply Chain Integrity and Security, and Public Information and Warning

DHS NPPD conducted a series of Supply Chain Workshops across the Critical Manufacturing and Energy critical infrastructure sectors in 2015. Federal partners, private companies, and university leaders presented various topics to more than 250 state, local, Federal, and private-sector attendees, including Regional Supply Chain Threat Information, Economic Espionage, and Supply Chain Best Practices: An Industry Perspective. Workshops for both sectors took place in Oregon (Portland) and Texas (Midland, Houston, El Paso, and Corpus Christi).

Physical Protective Measures, and Supply Chain Integrity and Security

The 2011 Strategic National Risk Assessment identified space weather (e.g., solar flares, coronal mass ejections) as posing a significant risk to the security of the Nation. In October 2015, the White House issued the *National Space Weather Strategy*, which outlines six goals to help the Nation prepare for the near- and long-term impacts of space weather. Space-weather events can disrupt various critical infrastructure systems, including transportation, communications, and electrical power. The strategy outlines objectives for protecting against space weather, including strengthening public-private collaborations to enhance understanding about and reduce vulnerabilities, and encouraging industries to adopt standards, business practices, and operational procedures that address space-weather vulnerabilities.



THEN and Now

Personal Identity Verification Cards

The 2012 *National Preparedness Report* discussed rapid progress in issuing personal identity verification cards to Federal employees and contractors, but slower progress in implementing these cards to access Federal facilities and networks. Various efforts since then, including a Cyber Sprint in 2015, have increased card implementation tenfold, from 7 percent at the end of fiscal year 2011 to more than 76 percent at the end of fiscal year 2015.

RadNet

The 2012 *National Preparedness Report* discussed nationwide surveillance systems for biological and radiological agents, including RadNet, a national network of monitoring stations that regularly collects samples to analyze for radioactivity. Over time, EPA has added new stations, as well as upgraded existing ones. RadNet now includes 135 stationary monitors around the country and 40 portable stations for placement in an emergency.

Regional Resiliency Assessment Program

This program performs assessments of critical infrastructure systems within a particular geographic region. By the end of 2012, DHS NPPD had partnered with stakeholders to complete 27 assessments, which identified critical infrastructure interdependencies, cascading effects, and capability gaps. Since then, DHS has explored ways to adapt the assessment process to address emerging issues, such as climate change, cybersecurity, and electromagnetic-pulse preparedness.

BY THE NUMBERS

1,700 TRAINEES

DHS NPPD provided 1,700 participants from commercial facilities in various critical infrastructure sectors with training on the threat from violent extremism, including courses on “Understanding Violent Extremism and Radicalization” and “Enhancing Security for Violent Extremism.”

2,653 FIREARMS INTERDICTED

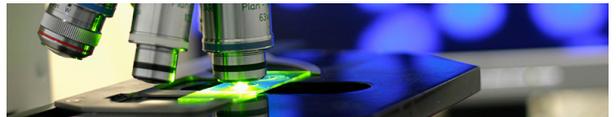
In 2015, TSA screened more than 700 million passengers at airports nationwide, interdicting 2,653 firearms.

120 PARTICIPANTS

The National Association of State Energy Officials, in partnership with DOE and the National Conference of State Legislatures, delivered a State Energy Risk Assessment workshop to 120 state and local energy and emergency-management officials.

500 PARTNERS

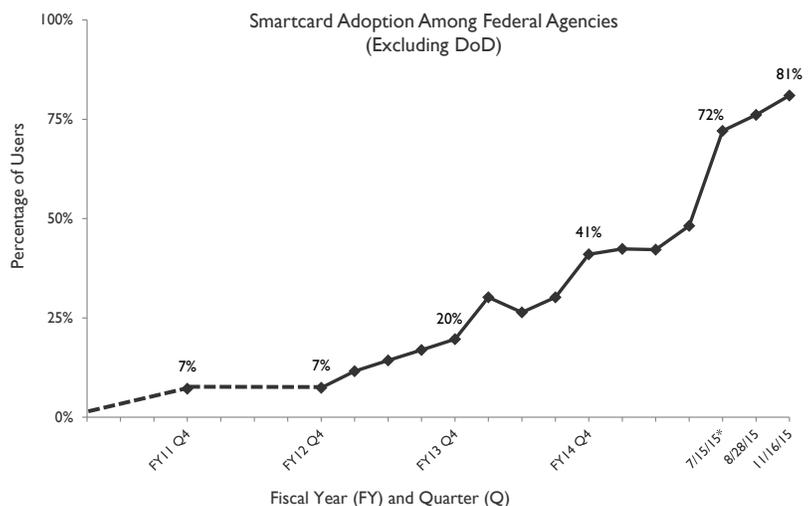
In fiscal year 2015, more than 500 Federal, state, and local partners—including representatives from environmental, law enforcement, public health, and transportation agencies; fire departments; emergency medical services; national laboratories; and National Guard units—participated in BioWatch drills and exercises.



PREPAREDNESS TRENDS AND FIGURES

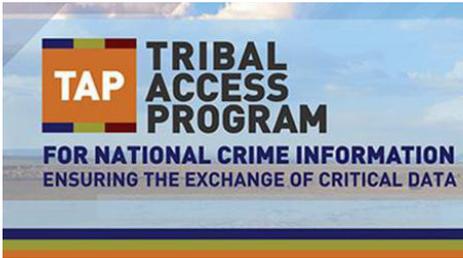
Access Control and Identity Verification in Federal Agencies

In 2015, a Cyber Sprint initiated by the White House resulted in the single largest increase in the use of secure access to government systems since the adoption of smartcards (i.e., identity badges embedded with computer chips) was mandated in 2004. Ensuing efforts by Chief Information Officers led to an increase in smartcard use in civilian agencies, from 41 percent at the end of 2014 to 81 percent as of November 2015. Improving implementation of smartcards for controlling and validating access to Federal facilities and systems was noted as an area for improvement in the 2015 *National Preparedness Report*, further demonstrating the effectiveness of the Cyber Sprint initiative.



Note: Dashed lines indicate quarters in which data were unavailable.

PREPAREDNESS SNAPSHOTS



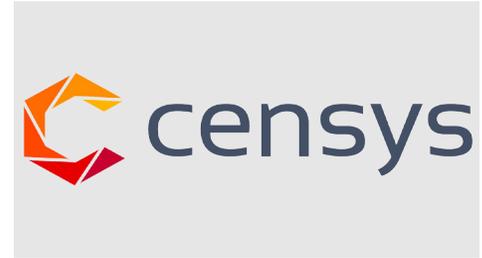
NATIONAL CRIME INFORMATION SYSTEM

Ten tribes began participating in a trial of DOJ's National Crime Information system, which allows them to access and exchange data on crime with Federal and state governments. This pilot project provides tribal law enforcement agencies with direct access to Federal, state, and local criminal records for the first time, thereby enhancing community resilience and the safety of tribal law enforcement.



NATIONAL CYBER SECURITY AWARENESS MONTH

In October 2015, DHS sponsored the 12th annual National Cyber Security Awareness Month. National Cyber Security Awareness Month—which the White House, 48 states, and 35 local governments have recognized through signed proclamations—engages the public and private sector through events and initiatives to raise cybersecurity awareness and increase the Nation's resilience to cyber threats. More than



140 events took place across the country, which is 16 percent more than the previous year.

UNIVERSITY OF MICHIGAN

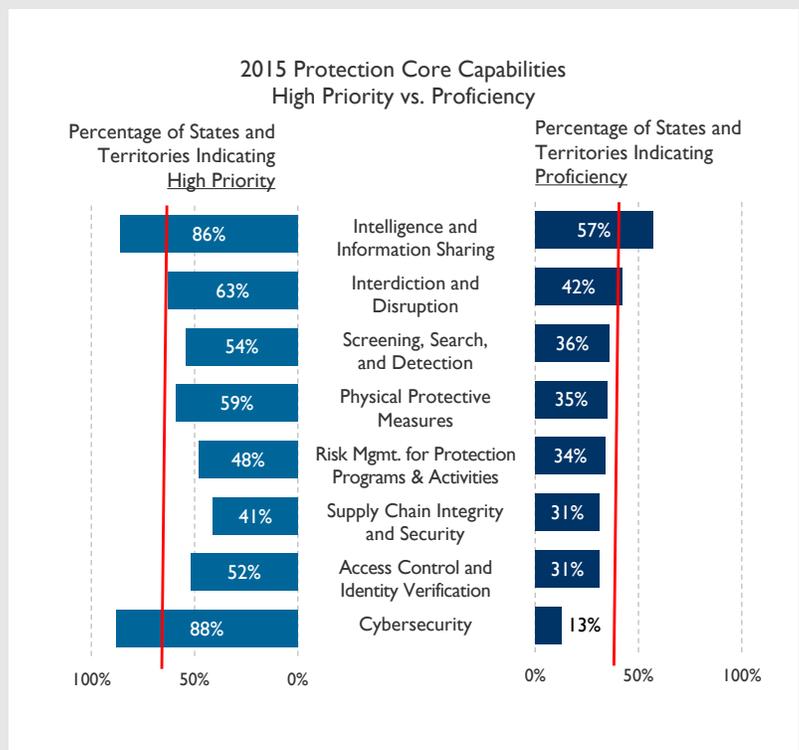
In October 2015, the University of Michigan and Google launched Censys, a cybersecurity tool that identifies security concerns by tracking networked devices and assessing their level of security. The project has resulted in the enhanced security of more than 100,000 industrial control systems.

STATE PERSPECTIVES ON PREPAREDNESS

2015 State Preparedness Report Results

- Protection core capabilities with higher priority ratings generally had higher proficiency ratings. Cybersecurity, however, was the fifth-highest-rated priority, but the lowest-rated in proficiency among all 31 core capabilities.
- States and territories reported some of the lowest proficiency in the Protection mission area. Of the eight core capabilities specific to Protection, five were among the bottom 10 of all 31 core capabilities.
- Although states and territories rated most Protection core capabilities as lower priority, Cybersecurity and Intelligence and Information Sharing were among the top-10 highest-priority core capabilities.

Notes: Vertical red lines (|) indicate the average rating for all core capabilities. The chart and statements do not include contributions from the three cross-cutting core capabilities—Planning, Operational Coordination, and Public Information and Warning.



Protection Mission Area

KEY FINDINGS

Key Finding: Cyber breaches that target personal information demonstrate the importance of cybersecurity information sharing between the public and private sectors, particularly in increasingly targeted industries, such as healthcare.



Federal identification of new cyber threats is helping the private sector to take protective actions. In fiscal year 2015, the National Cybersecurity and Communications Integration Center—a cyber center for situational awareness, incident response, and management that disseminates information between the Federal Government and the private sector—shared 6,000 bulletins and warnings with the private sector, providing warnings on threats and recommendations for addressing them. In addition, the center offers an on-site service to aid organizations affected by malicious cyber activity in identifying threats, addressing vulnerabilities, and recovering from breaches, as well as to disseminate information on new malicious tactics and threats. In fiscal year 2015, the Center responded to 32 on-site incidents, double the response rate from fiscal year 2014. FBI has similarly increased notification efforts, alerting 1,000 more entities in 2015 to potential attacks than in 2014, from 3,000 to more than 4,000.

Information sharing also allows industries to communicate their expertise and risk assessments to law enforcement. For example, the National Cyber-Forensics and Training Alliance—a nonprofit

organization founded in coordination with FBI to connect law enforcement agents with subject matter experts to facilitate cyber investigations—contributed to high-profile investigations in 2015, including the dismantlement of Darkode (an online black market). As of December 2015, the organization has helped prosecute more than 300 cyber criminals. To bolster industry relations with investigators, the FBI Cyber Division engaged more than 700 health insurance executives in May 2015, sharing information to educate them on threats, actors, and tactics specific to their industry. FBI also hosted its first Chief Information Security Officer Academy in 2015, which brought together Chief Information Security Officers from 28 Fortune 500 companies, for a weeklong event aimed at building relationships and improving understanding of the shared responsibilities of law enforcement and the private sector.

The Federal Government also responded to the need for structured public and private partnerships in 2015. *Executive Order 13691: Promoting Private Sector Cybersecurity Information Sharing*, which the President issued in February 2015, formally establishes

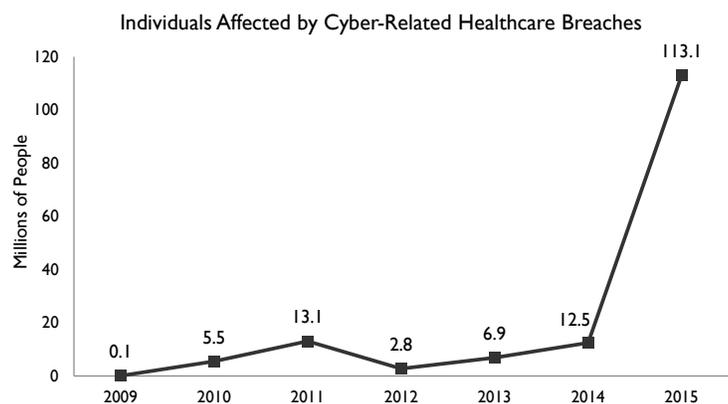


Figure 6: The number of individuals affected by a breach in healthcare networks increased markedly between 2009 and 2015.

Information Sharing and Analysis Organizations to help distribute critical intelligence within industry and between the private and public sectors. To this end, in September 2015, DHS selected the University of Texas at San Antonio to develop a set of standards for such organizations. This effort entails gathering input from stakeholders in the public and private sectors regarding best practices for how the Federal Government should absorb and disseminate threat information in partnership with industry.

The expansion of information-sharing efforts has been particularly important for the healthcare sector, which is under increasing attack by malicious actors seeking to steal personally identifiable information for fraudulent activities. In 2015 alone, hackers illegally accessed more than 100 million insurer records (see Figure 6). To better understand the cybersecurity challenges the healthcare industry is facing, the Health Information Trust Alliance (an Information Sharing and Analysis Organization) conducted the first industry-wide empirical study of cyber threats specific to healthcare. In 2015, the alliance also added more than 500 industry organizations to its Cyber Threat Xchange—a database that hosts updates on malicious cyber activity.

Key Finding: Several high-profile breaches of Federal computer networks in 2015 illustrate infrastructure and workforce obstacles to securing government systems.



What is OPM doing to protect my data?

OPM.GOV/CYBERSECURITY

The Federal Government remained a prime target for malicious cyber activity in 2015. Using personal information stolen through other hacks, criminals exploited a weakness in the Internal Revenue Service's (IRS's) "Get Transcript" online application to obtain taxpayer information that could be used to fraudulently claim a tax refund. As many as 13,000 suspect returns for tax year 2014 received refunds, totaling \$39 million in potentially fraudulent tax refund claims. Adversaries also hacked into OPM networks, obtaining access to personal government employee data (e.g., social security numbers and fingerprints) and records of at least 21.5 million individuals, 19.7 million of whom had applied for a background investigation.

The OPM breach, in particular, highlights risks at both the individual and national levels. Accessed personally identifiable information—especially potentially compromising information contained in security clearance investigations—could expose Federal employees to several potential threats, including identity theft and blackmail. In addition, vulnerable systems impede the capacity of all

levels of government to safely store and access relevant data, such as emergency contacts and security clearances.

In response to such hacks, DHS accelerated efforts to make portions of its newest security platform available to all civilian agencies by the end of 2015. While each agency is responsible for securing its own networks using information security standards developed by the U.S. Department of Commerce (DOC) National Institute of Standards and Technology (NIST), DHS develops tools to help ensure uniformity and effectiveness across the Federal Government. The most recent phase of EINSTEIN, EINSTEIN 3A, offers agencies the capability to block known malicious activity using both classified and unclassified data. This capability represents a significant upgrade from previous versions of EINSTEIN that could only monitor and detect suspicious users. Furthermore, to mitigate fallout from the exposure of data, many Federal agencies are sponsoring identity- and credit-monitoring services for individuals affected by data breaches.

Despite these efforts, securing Federal networks remains a persistent challenge, with a number of factors slowing attempts to address existing vulnerabilities. For example, widespread legacy systems—in the case of OPM, up to 30 years old—are often incompatible with newer information technology security methods and software. Shortages in the information technology workforce also impede enhanced cybersecurity. While hiring in the Federal Government can take time to navigate the necessary procedures for clearance, this is especially problematic for cybersecurity, where in-demand technical talent can be hired faster in other sectors. Hiring challenges were exacerbated when OPM took the web-based platform used for completing and submitting background investigations forms offline for several weeks to

enhance security. A further challenge in 2015 was the expiration of innovative programs to resolve workforce obstacles, including one that granted IRS the ability to hire faster and offer higher-than-standard government pay rates.



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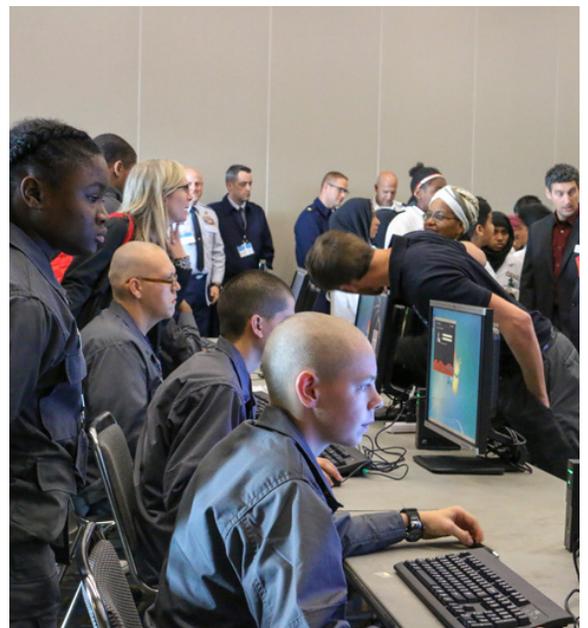
PREPAREDNESS CASE STUDY: DHS'S ENHANCED CYBERSECURITY SERVICES PROGRAM

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DHS's Enhanced Cybersecurity Services program is a cyber-intrusion prevention capability that helps protect against unauthorized access and data transfers. While using capabilities similar to the EINSTEIN program, the Enhanced Cybersecurity Services program focuses on protecting U.S.-based public and private organizations, including state and local governments. Through the Enhanced Cybersecurity Service program, DHS sources sensitive and classified threat indicators, which it shares with accredited commercial service providers. These providers can then offer cybersecurity services associated with this data to customers.

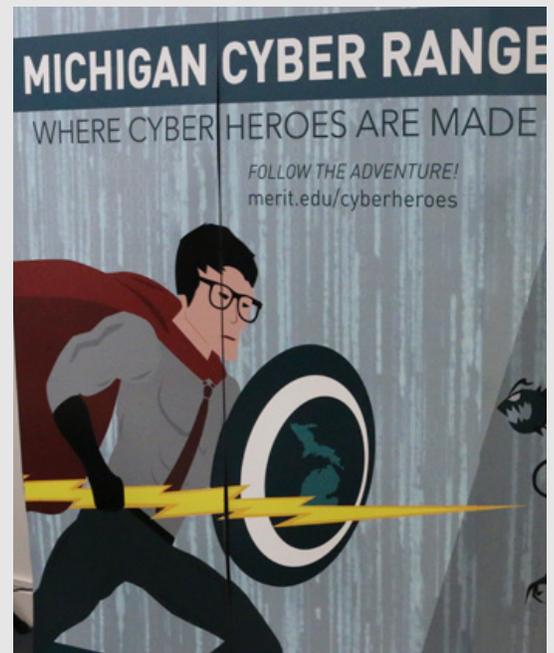
Key Finding: While states are focusing more attention on cybersecurity by expanding the responsibility of state Chief Information Security Officers and investing a larger portion of their Federal preparedness grants in improving cybersecurity planning and equipment, cybersecurity capabilities remain at risk of decline.

States are placing greater emphasis on cybersecurity. In 2015 State Preparedness Report submissions, 88 percent of states identified the development of the Cybersecurity core capability as a high priority, compared to 77 percent in 2012. This 11 percentage point increase was the second largest increase in priority rating over the four-year period for all core capabilities. Moreover, results from the latest biennial survey of state Chief Information Security Officers in 2014 indicate that their responsibilities have become more expansive, and that they show an increased focus on strategy and risk management. Finally, states are increasing cybersecurity funding, with nearly half reporting year-over-year budget growth in 2014, compared to less than a quarter of states reporting growth in 2012. States are also choosing to invest a larger portion of their Federal preparedness grants into the Cybersecurity core capability. Cybersecurity grant funding to states increased from a quarter of a percent in 2011 to one percent in 2014 (the most recent available data), representing a nearly fourfold increase in investment. The majority of this funding went to cybersecurity equipment (72 percent on average from 2011 to 2014), followed by investments in planning efforts (22 percent on average).

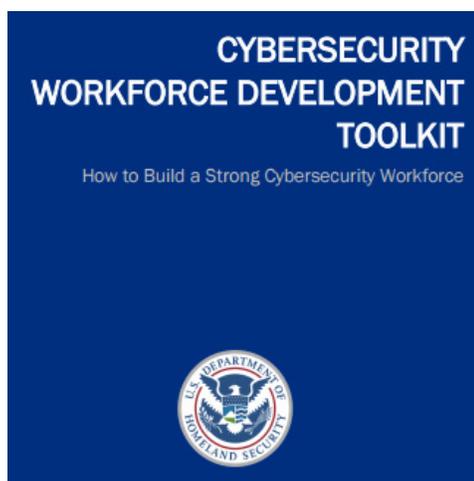


PREPAREDNESS CASE STUDY: MICHIGAN'S CYBER INVESTMENTS

Michigan has invested in several cybersecurity preparedness projects over the past few years as part of the Michigan Cyber Initiative. Most recently, Michigan released the Cyber Disruption Response Plan in October 2015. The plan outlines a framework to help identify and respond to malicious cyber activity, and establishes a flexible approach to address cyber threats of varying scope and severity. Michigan is helping to address cyber workforce shortages through the Michigan Cyber Civilian Corps, a volunteer network activated only in times of emergency. When called up, volunteers receive the protections afforded to state employees, but are otherwise employed in other sectors. Finally, in 2012, Michigan partnered with a nonprofit organization to create Cyber Range, which provides a simulated threat environment for individuals to learn and exercise cybersecurity response skills. Since its launch, Cyber Range has trained over 2,500 individuals through interactive trainings at its facilities.



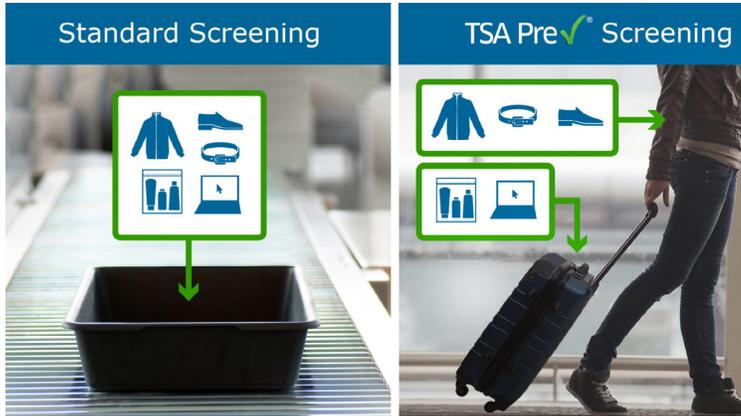
States are also taking greater ownership of their Cybersecurity capability, with more identifying it as a state responsibility than solely a Federal one. In 2015, 70 percent of states and territories reported that they perceived addressing Cybersecurity capability gaps as entirely or mostly a state responsibility, compared to 49 percent in 2012. Of 53 states and territories that the National Emergency Management Association surveyed, all identified the need for continued Federal support to augment cybersecurity efforts. Yet, while 60 percent identified financial assistance as among the Federal resources needed to enhance local cybersecurity, the largest demand was for skills-based assistance, including training opportunities (94 percent), technical assistance (91 percent), and the sharing of best practices from other states (85 percent). This indicates a greater investment in longer-term, internal cybersecurity capacity by state and territorial governments. Notwithstanding this increase in investment and ownership, Cybersecurity remains the lowest-rated core capability, as well as the capability most at risk of declining, as reported in 2015 State Preparedness Report submissions.



DHS has developed several resources to assist states and territories improve their Cybersecurity performance. For example, the Cybersecurity Assessment and Risk Management Approach incorporates various best practices into a comprehensive, functions-based risk-management strategy that enables states and territories, as well as other public- and private-sector organizations, to more effectively identify, assess, and manage their cybersecurity risks. By following this approach, users can raise their level of cybersecurity competency and prioritize critical cyber infrastructure within their organizations. In addition, the DHS Critical Infrastructure Cyber Community Voluntary Program continues to connect critical infrastructure owners and operators with tools and resources to improve their cyber risk-management practices, using the NIST Cybersecurity Framework as a guide. The program provides a toolkit for state, local, tribal, and territorial governments to help them understand their threat landscape and enhance their cyber risk-management practices. To help address workforce challenges, DHS developed the Cybersecurity Workforce

Development Toolkit, which helps organizations conduct workforce planning and understand staffing needs, and includes templates for creating cybersecurity career paths and tips for recruiting and retaining top-level talent.

Key Finding: Major security lapses in its passenger screening methods have led TSA to end the Managed Inclusion 2 program and take steps to address the problem by increasing emphasis on other risk-based initiatives, such as extending the TSA Pre✓® program.



In spring 2015, the DHS Office of the Inspector General conducted undercover tests of TSA’s passenger-screening technologies and processes at airport security checkpoints. The Inspector General found that Transportation Security Officers failed to find restricted materials 96 percent of the time. TSA responded to these findings by implementing several changes to its screening, search, and detection practices and policies.

TSA revised standard operating procedures for screenings and began field-testing them in six airports nationwide in June 2015. TSA also established the “Mission Essentials” training series, which focuses on current threats, equipment

capabilities, and how to ensure screening procedures are carried out effectively. All frontline Transportation Security Officers have completed the first installment of this training, and will continue to receive updated installments of this training annually.

PREPAREDNESS CASE STUDY:
VETTING AIRPORT EMPLOYEES

Recent crimes by airport employees, including weapons trafficking, have prompted TSA to update guidelines on employee vetting. Previously, airport employees only received a single background check for criminal history, which occurred during the hiring process. Beginning in April 2015, TSA began requiring badged airport employees to undergo background checks every two years. TSA has also reduced access points to secure portions of airports, increased random employee screenings, and encouraged employees to report potential insider threats to better control and monitor the movement of employees within airport restricted zones.



TSA also faces the growing challenge of screening an increasing number of air travelers. Although TSA has implemented risk-based programs—which aim to identify low-risk passengers—to improve efficiency, recent lapses have exposed flaws in some of these programs. Managed Inclusion 2, for example, allowed TSA to randomly select passengers in the standard security line to enter an expedited lane typically reserved for known low-risk passengers. While reducing wait times, the practice may have allowed higher-risk individuals to circumvent more rigorous screening, reducing the efficacy of the risk-based approach. In September 2015, TSA ended Managed Inclusion 2. To maintain screening rates, TSA is focusing on increasing the number of travelers participating in programs such as TSA Pre✓®, which allows passengers to pre-register with TSA upon passing a background investigation. To increase enrollment, TSA incorporated 47 more airports and four additional airlines into TSA Pre✓® in 2015. In early 2016, TSA Pre✓® reached more than two million enrollees, enabling progress toward a more risk-informed screening process.

CBP TRUSTED TRAVELER PROGRAMS

In addition to TSA Pre✓®, a number of Trusted Traveler programs are offered through CBP to facilitate the movement of people in and out of the United States. Many CBP Trusted Traveler program participants are pre-eligible to participate in TSA Pre✓® lanes in airports.



GLOBAL ENTRY

Participants are verified low-risk travelers who bypass border protection lines upon landing from overseas through the use of automated kiosks.



NEXUS

Americans and Canadians may apply for membership in NEXUS, which facilitates expedited entry through northern land, air, and sea ports.



SENTRI

Those entering the United States through Mexico can apply for participation in SENTRI, which offers expedited border crossings, principally by car.

Key Finding: Federal departments and agencies have made progress in improving chemical facility safety and security, as well as educating chemical facility operators and surrounding communities about their rights, obligations, and existing safeguard requirements.



Under the Chemical Facility Anti-Terrorism Standards (CFATS) program, facilities housing hazardous chemicals and determined to be high-risk must submit site-security plans to DHS NPPD for review. The reviews ensure that facilities are taking necessary steps to secure their chemicals, consistent with applicable, risk-based performance standards. As of April 2015, DHS NPPD was facing a backlog of 900 site security plans that chemical facilities had submitted to the office for review. Although still backlogged, the office has reduced the total processing time on remaining security plans to between nine and twelve months, down from seven to nine years in 2013, according to a U.S. Government Accountability

Office (GAO) estimate. By the end of 2015, DHS NPPD had approved more than 2,200 site-security plans. The office has accomplished this in part by:

- Using field personnel in addition to headquarters officials to review site security plans, which increased the number of staff involved from 5 to approximately 130 people;
- Streamlining the case-management review process by eliminating duplicative roles;
- Enhancing the online tool that DHS NPPD uses to facilitate the review process;

DHS NPPD also continues to improve the review process. A February 2015 GAO study estimated that nearly 19 percent of facilities posing a toxic chemical release threat underestimated their distance of concern—i.e., the radius around the facility in which short-term exposure to a toxic plume could cause fatalities or serious injuries. Since DHS NPPD uses the distance of concern as one factor to initially assess a facility's level of risk, some facilities may have received a lower preliminary risk designation than warranted. Based on its statistical sample size, GAO estimates the number of facilities affected could be as low as 2 or as high as 543 facilities (out of 37,000 facilities submitting data). To address this issue, DHS NPPD is modifying the preliminary risk-designation process to eliminate the need for facilities to calculate and self-report distances of concern. Additionally, DHS NPPD received permission in August 2015 to collect data for the CFATS Personnel Surety Program, which will allow DHS NPPD to begin screening

individuals who work at the highest-risk chemical facilities and have access to restricted areas and critical assets for terrorist ties.

To educate industry about best practices in facility security more effectively, in 2015, the Chemical Sector Specific Agency (which leads DHS's public-private partnerships with the sector) disseminated 18,000 security resources, including DVDs on common security practices. During the 2015 Chemical Sector Security Summit, DHS NPPD briefed industry and government participants on implementation progress for the *Chemical Facility Anti-Terrorism Standards Act of 2014*, noting that the office has now approved site-security plans for almost two-thirds of the highest-risk regulated facilities in the country.

Community education and outreach are other important components of securing chemical facilities. To educate communities more effectively, EPA launched an online training portal for state, territorial, tribal, and local emergency response commissions that serve as liaisons between nearly 400,000 chemical facilities and their surrounding communities. An interagency working group also integrated 300,000 chemical facility datasets into EPA's Facility Registry System, creating a central repository for Federal information on facilities housing hazardous chemicals. Moreover, FEMA is coordinating with counties that have the largest concentrations of high-risk chemical facilities to help these facilities appropriately use IPAWS, which is the system emergency managers use to issue public safety alerts to safeguard those at risk during an incident.



Key Finding: A disruption in the biomedical supply chain has impeded laboratory testing and biomedical research, jeopardizing biosurveillance efforts and processes for developing medical countermeasures.

A number of institutional errors, including shortfalls in management, little scientific validation of procedures, and insufficient quality-control oversight in the shipment of dangerous pathogens, resulted in risks to public health across the biomedical supply chain. In May 2015, a private medical research company notified CDC of receipt of a shipment that contained some live *Bacillus anthracis* (anthrax) spores, instead of fully inactivated ones. Live *Bacillus anthracis* poses a threat to human health and is only distributed to facilities regulated by the Federal Select Agent Program. An investigation conducted by DoD determined that 88 primary laboratories (i.e., those receiving transfers of biological material directly from select agent production facilities) accidentally received live anthrax shipments. Those laboratories then forwarded shipments to 106 secondary facilities, bringing the total to nearly 200 affected locations worldwide. Primary and secondary laboratories perform the frontline research on medical countermeasures, including developing personal protective equipment for first responders or vaccines against bioterrorism agents. Shipments were sent to all 50 states, the District of Columbia, 3 U.S. territories, and 9 foreign countries. As the investigation unfolded, Federal departments and agencies shared information about these incidents, including deploying the draft Biological Incident Notification and Assessment Protocol.

WHAT IS THE FEDERAL SELECT AGENT PROGRAM?

The Federal Select Agent Program, which comprises the CDC Division of Select Agents and Toxins and the APHIS Agriculture Select Agent Services, regulates the possession, use, and transfer of highly infectious or dangerous pathogens and toxins. Examples of select agents include *Yersinia pestis* (the bacteria that causes plague) and Ebola virus.

Select agents are used by universities, private companies, and government laboratories for research into medical countermeasures, such as vaccines or personal protective equipment. Some select agents, like anthrax, are inactivated before shipment. This allows researchers to use the shell of the bacteria to evaluate biosurveillance technologies or personal protective equipment with minimum risk of exposure.

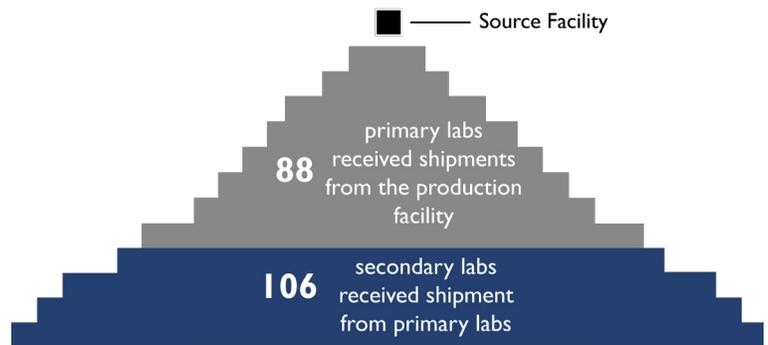
Since 2003, Federal production facilities have shipped select agents in approximately 4,250 distinct transfers.

In the wake of this anthrax incident and subsequent investigations, the parcel service responsible for transporting dangerous pathogens stopped accepting shipments that were identified as containing select agents or toxins. No carrier with the same low-cost national and international distribution capacity has agreed to serve as a replacement. The added expense of the shipping process (at least three times above previous costs in some cases) has also adversely affected research aimed at safeguarding human health and food safety. Some laboratories have reported that these increased costs will reduce the amount of laboratory testing they can conduct. Laboratories have also noted that they do not have the capacity or resources (given reduced coverage and increased cost of shipment) to expediently send samples to national laboratories, which increases risks associated with detecting and responding to outbreaks. Following these incidents, DoD, HHS, CDC, USDA, and other relevant departments and agencies have worked together to identify and implement potential solutions to shore up options for safely and securely inactivating and transporting pathogens, and to enhance our national biosafety and biosecurity system, including in the areas of transparency, swift incident reporting and accountability to the public, and material stewardship that includes strong inventory management and control measures.

Due to increased shipment costs after the loss of this large carrier, the assessment of emerging threats, such as highly pathogenic avian influenza viruses, slowed down. The USDA Southeast Poultry Research Laboratory, for example, sent half as many select-agent shipments in 2015 as compared to previous years. The laboratory also observed a reduction in the frequency and speed of transfers between CDC and USDA APHIS, the agency responsible for monitoring and identifying animal and plant disease outbreaks. Shipment issues have even dissuaded some international partners from sending samples to U.S. laboratories, and U.S. laboratories from sending samples to international partners. These transactions are an important part of global biosurveillance. In an October 2015 memorandum, the Federal Government released recommendations for enhancing biosafety and biosecurity in the United States.

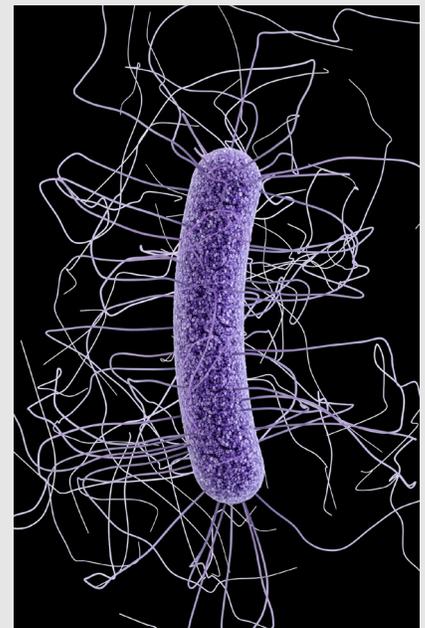
Cascading Risk in the Biomedical Supply Chain

At least **194** facilities were affected by the shipment of live anthrax spores from a single source facility



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**PREPAREDNESS CASE STUDY:
 COMBATING ANTIBIOTIC-RESISTANT
 BACTERIA**

In 2015, the Federal Government increased health preparedness by taking actions to address antibiotic-resistant bacteria, which cause at least two million illnesses and 23,000 deaths annually in the United States. In March 2015, the White House released the *National Action Plan for Combating Antibiotic-resistant Bacteria*, which provides a five-year roadmap for implementing the *National Strategy for Combating Antibiotic-resistant Bacteria*. In November 2015, the Taskforce for Combating Antibiotic Resistant Bacteria released a progress report on implementing the objectives outlined in the plan. The report found that Federal agencies had improved antibiotic stewardship and reporting, increased information-gathering capacities to support rapid diagnostics and research on new antibiotics and antibiotic alternatives, and collaborated with multilateral partners to establish a commitment to decreasing antimicrobial resistance globally.



Key Finding: Widespread adoption of chip-enabled payment cards has bolstered national resilience to debit and credit card fraud, crimes that have complicated interdicting and disrupting terrorist financing.



Terrorists have historically funded their activities through criminal activities, including credit card fraud. For example, the perpetrator of the 2002 Bali bombing partially funded the attack through credit card fraud and wrote a chapter of his prison memoir on “carding,” encouraging other terrorists to engage in this type of fraud. Credit card and banking fraud also helped finance subsequent attacks worldwide, including those on the Madrid metro in 2004 and the London Underground in 2005.

To enhance the Nation’s capability to disrupt credit fraud, which also helps to disrupt terrorist financing, industry and the Federal Government adopted greater use of chip-enabled payment cards in 2015. The four major American card issuers estimated that they would distribute more than half a billion

chip-enabled cards in 2015. While most issuers have distributed chip and signature cards instead of those requiring PIN codes (which are internationally preferred for added security), the former still guards against counterfeiting and protects cardholder digital data. On January 1, 2015, in accordance with Executive Order 13681, *Improving the Security of Consumer Financial Transactions*, payment cards issued through the General Services Administration, as well as federally issued debit cards for programs like Direct Express, were required to begin transitioning entirely to chip and PIN protections.

These efforts bring the United States in line with international financial-protection and criminal-disruption practices. In the United States, less than one percent of card transactions in 2014 employed chip technology. In many European countries, nearly all credit card transactions are chip-based, as are more than three-quarters of all card transactions across Canada, Latin America, Africa, and the Middle East.

Key Finding: Federal, state, and local agencies are expanding international and domestic partnerships to advance planning and coordination efforts for countering violent extremism.

In 2015, the global threat from violent extremism persisted as extremists used technologies and social media platforms to spread propaganda across international borders and to radicalize and recruit individuals. Additionally, U.S. citizens traveled or attempted to travel overseas to join violent extremist groups, such as the Islamic State in Iraq and the Levant. In 2015, the Federal Government broadened international partnerships to counter violent extremists, for example, by partnering with an international network of cities to launch the Strong Cities Network. The Strong Cities Network brings together international resources, training programs, and information sharing to protect and build resiliency against the threat of violent extremism.

As of December 2015, New York City, Minneapolis, Denver, Atlanta, and over 20 international cities across all regions of the world were members of the Strong Cities Network. Additionally, DHS continued supporting the U.S.-Europe-based Countering Violent Extremism Exchange Program to promote sharing strategies and best practices for countering violent extremism, including empowering youth, resolving grievances, and protecting rights and liberties.



DHS also worked with DOJ and the National Counterterrorism Center to launch the Three City Pilot program, which assisted the Greater Boston area, Los Angeles, and Minneapolis-St. Paul in the development of strategic frameworks for countering violent extremism. State and local government officials, nongovernmental organizations, community leaders, and interfaith organizations collaborated to develop comprehensive, solution-based frameworks, which were all publicly released in February 2015. While all three metropolitan areas began implementing shared strategies, each takes a distinct approach to countering violent extremism:



- The Greater Boston area’s framework focuses on developing preventative resources through mental health and public health initiatives. This aims to incorporate programs that counter violent extremism into existing efforts that promote statewide resiliency and prevent violence (rather than having a separate program), which could otherwise create a stigma and reduce program participation.
- Los Angeles’s framework emphasizes the development of public trust to facilitate initiatives countering violent extremism.
- Minneapolis-St. Paul’s framework promotes “community-led intervention teams” to protect at-risk communities from violent extremist recruitment.

By offering different approaches, these frameworks provide the opportunity to identify and compare best practices. The DHS Science and Technology Directorate is currently funding evaluations of the pilot programs in Boston and Los Angeles to gather feedback from community leaders and stakeholders and ensure efforts are having the desired impact.

GREATER BOSTON’S APPROACH TO COUNTERING VIOLENT EXTREMISM: ENHANCING VIOLENCE PREVENTION AND RESILIENCY EFFORTS

The Greater Boston area’s framework for countering violent extremism draws from existing social and emotional wellness programs and anti-gang and anti-bullying efforts. The framework encourages nonprofit organizations, schools, and faith-based institutions to hire case managers and youth mentors to implement structured activities that help youths develop interpersonal, self-advocacy, and conflict-resolution skills. These skill-building activities are designed to help individuals become resilient to exploitation by violent extremist groups and other harmful influences. While developing the framework, however, the Greater Boston area jurisdictions identified limited public and private resources to administer these programs. In addition, jurisdictions determined that service providers—such as social workers, case managers, and school counselors—lacked the proper training to handle cases involving violent extremism. As a result, the Greater Boston area determined the need for behavioral health experts to train other service providers on effective intervention approaches.

Key Finding: To improve victim survivability in active-shooter incidents, Federal efforts are focusing on improving response coordination and empowering bystanders to engage in life-saving actions.

The 2015 *National Preparedness Report* discussed an FBI study of active-shooter events in the United States between 2000 and 2013 that found an increase in both their number and severity in recent years. In 2015, several active-shooter incidents captured national attention, including shootings in Charleston, South Carolina; Chattanooga, Tennessee; and San Bernardino, California.

Federal agencies and private-sector partners continued to promote an integrated approach among first responders

and healthcare providers to improve response to active-shooter incidents. In June 2015, the DHS Office of Health Affairs released *First Responder Guidance for Improving Survivability in Improvised Explosive Device and/or Active Shooter Incidents*. The guidance encourages greater coordination among law enforcement, fire, and emergency medical services agencies, including increased dialogue among these groups on changes to tactics, techniques, and procedures. Toward this end, the Healthcare and Public Health Sector Coordinating Council released *Active Shooter Planning and Response in a Healthcare Setting*, which expands on previous guidance for healthcare facilities, and includes new information on law enforcement tactics and how to achieve an integrated medical and mental health response. In addition, the FEMA Center for Domestic Preparedness collaborated with the Federal Law Enforcement Training Centers and the National Disaster Medical System to conduct a joint exercise that integrated actions by law enforcement and medical professionals to address a scenario involving active shooters and mass casualties.

In cases where victims of active-shooter events may be severely bleeding, trained medical professionals may not arrive in time to save lives. During incidents such as the 2013 Boston Marathon bombing and the 2013 Washington Navy Yard shooting, bystanders aided victims by using various clothing items to help control bleeding. In 2015, the National Security Council convened a series of roundtable discussions among more than 50 health and emergency response organizations involved in responding to injured citizens. Participants unanimously supported an initiative to empower the general public to save lives by raising awareness of basic techniques to stop life-threatening bleeding. As a result, in October, the White House announced a campaign called “Stop the Bleed,” which consists of three primary efforts:

- An ad campaign that informs viewers that the odds of surviving life-threatening bleeding increase if direct pressure is applied to wounds
- The distribution of bleeding-control kits placed by defibrillators in public locations, each with “just-in-time” audio and visual training guides
- The production of a FEMA informational video detailing how the Stop the Bleed campaign can save lives in many circumstances, including auto accidents, not just acts of violence

Since the announcement, private-sector groups and nonprofit organizations—including the American Red Cross, Charlotte Douglas International Airport, and the Connetquot Central School District of Islip, New York—have conducted various activities in support of the program. The DHS Office of Health Affairs also maintains the [“Stop the Bleed”](#) website in support of this campaign.



Mission Area Overview

MITIGATION

Focused on reducing loss of life and property by lessening the impact of disasters through increasing risk awareness and leveraging mitigation products, services, and assets



..... Key Finding Highlights



- Difficulties associated with identifying and repairing structurally impaired dams persist, increasing the potential for dams to fail with severe consequences for nearby communities. (p. 53)
- Recent studies and real-world incidents have demonstrated the benefits of green infrastructure for disaster mitigation, prompting the Federal Government to develop tools and guidance that support adoption of green infrastructure. (p. 61)
- The Federal Government is encouraging broader use of mitigation measures to address the threat of post-wildland-fire flooding and erosion. (p. 63)

Core Capabilities in Practice

The *National Mitigation Framework* (“Mitigation Framework”) describes seven core capabilities, including how they interact to reduce loss of life and property and increase community resilience.

To effectively mitigate risks, a community begins with **Threats and Hazards Identification**, including their frequency and magnitude. Next, the community conducts **Risk and Disaster Resilience Assessments** to understand the consequences that these threats and hazards would have if they occurred. Based on this knowledge, community officials can begin **Planning** efforts to manage the risk and provide **Public Information and Warnings** to residents. These actions enable **Long-term Vulnerability Reduction**, which limits or manages the effects of a disaster through one or more of the following strategies:

- *Risk avoidance* – Preventing exposure to an event (e.g., using zoning rules to prevent the construction of homes in high-risk areas)
- *Risk reduction* – Minimizing vulnerabilities (e.g., retrofitting buildings to be more resistant to earthquakes)
- *Risk transfer* – Eliminating or limiting liability for harm, without reducing vulnerability (e.g., purchasing insurance)

Since a community can rarely avoid risks completely, the Mitigation Framework encourages leadership, collaboration, partnership building, education, and skill building before an event through **Community Resilience**, with the goal of supporting other capabilities and building

..... CORE CAPABILITIES IN THE MITIGATION MISSION AREA

- Community Resilience
- Long-term Vulnerability Reduction
- Operational Coordination
- Planning
- Public Information and Warning
- Risk and Disaster Resilience Assessment
- Threats and Hazards Identification

resilience, and **Operational Coordination** (the ability to integrate critical stakeholders to support efforts during and after an incident).

The following are examples of actions taken in 2015 that highlight the relationships among the seven core capabilities in the Mitigation Framework.

Threats and Hazards Identification, Risk and Disaster Resilience Assessment, and Planning

In 2016, a collection of private and community partners—with the financial support of the Rockefeller Foundation—launched the RE.invest Initiative, which has guided eight communities through the steps necessary to develop strategic plans that mitigate their risks. Initiative members worked with scientists to identify each community's greatest hazards and its vulnerabilities to those hazards. The initiative culminated in the release of the report entitled *A Roadmap for Resilience*, which details the activities, initiatives, and outcomes that have strengthened resilience in the eight partner cities.

Public Information and Warning, and Long-term Vulnerability Reduction

Maine launched a Climate Adaptation Toolkit with climate resilience educational resources directed toward businesses and citizens, including the *Maine Comprehensive Energy Plan Update* published in February 2015. In addition, the Federal Alliance for Safe Homes released *If Disaster Strikes, Will You Be Covered?*, a guide that explains the various hazards that threaten homes and the best types of disaster insurance for managing the associated risks.

Community Resilience and Operational Coordination

The Colorado Governor's Office and the Colorado Resiliency and Recovery Office collaborated with thousands of Coloradans and over 150 different partners—such as local governments, Federal and state agencies, nonprofits, faith-based organizations, and businesses—on the Colorado Resiliency Project, listening to stories of resilience with the goal of creating a framework to empower communities to be more resilient in the face of natural disasters and other potential disruptions. As a result of this coordination, Colorado adopted a Resilience Framework—a strategic plan outlining future actions that Colorado will take to strengthen resilience—and advanced to the second phase of the National Disaster Resilience Competition.





THEN and Now

Mitigation Plans

As of December 31, 2015, 22,706 communities have mitigation plans that are FEMA-approved (or approvable, pending adoption), up from less than 18,000 in 2010. The percentage of the Nation's population covered by planned mitigation strategies has increased from 69 percent in 2011 to 83 percent in 2015.

Community Rating System

This program offers flood insurance discounts to policyholders in exchange for their community enacting flood-control and floodplain management policies that exceed the National Flood Insurance Program's minimum requirements. In 2012, there were a total of 1,100 participating communities—that has since grown to 1,368 in 2015.

StormReady and TsunamiReady

The number of communities that have voluntarily committed to advanced mitigation efforts under the National Weather Service's *StormReady* and *TsunamiReady* programs has increased from 1,950 in 2012 to 2,424 as of February 2016.

BY THE NUMBERS

300,000 INFORMATION SHEETS

The National Oceanic and Atmospheric Administration (NOAA) distributed 300,000 NOAA *Extreme Weather Information Sheets*. These waterproof, "one-stop" reference guides contain phone numbers and web resources that residents can use during life-threatening weather emergencies.

\$21 MILLION IN LOSSES AVOIDED

Research suggests that the \$8 million that NOAA and the Nature Conservancy invested in the Fisher Slough Marsh restoration project in Washington State will save the community up to \$21 million over the next 50 years and reduce flooding on as many as 600 nearby acres.

23 STATES REHABILITATING DAMS

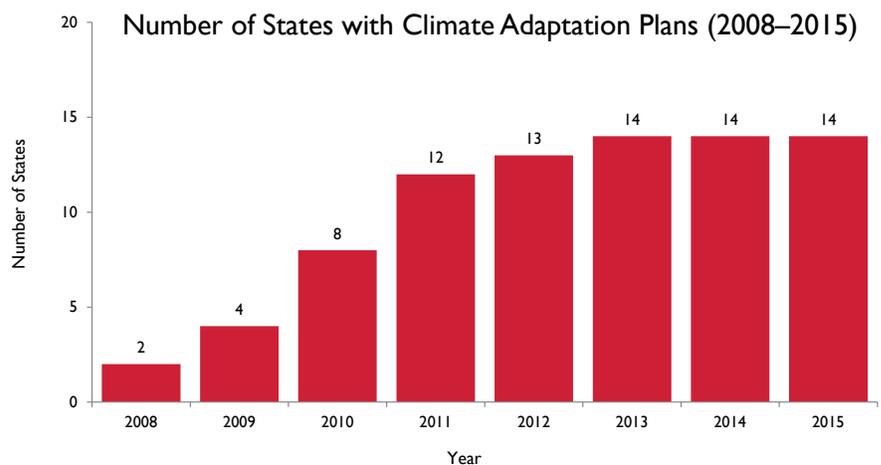
USDA provided \$73 million in funding for about 150 dam rehabilitation and assessment projects in 23 states in order to ensure that the dams are protecting individuals from floods and providing essential water supplies in areas affected by drought.



PREPAREDNESS TRENDS AND FIGURES

Increasing State Planning for Climate Change

A growing number of states are considering the risks associated with climate change in their planning efforts. For example, climate adaptation plans lay out specific actions that states will undertake to reduce their vulnerability to climate change. According to data from the Georgetown Climate Center, the number of states that have chosen to adopt statewide climate adaptation plans increased steadily from only two in 2008 to 14 in 2013. Although no new states have finalized climate adaptation plans since 2013, nine states have plans currently under development. In addition, the number of states and territories that reported considering climate change when developing their Threat and Hazard Identification and Risk Assessment rose to 38 in 2015 from 28 the previous year.



PREPAREDNESS SNAPSHOTS



MINNEAPOLIS AND HENNEPIN COUNTY, MINNESOTA

Minneapolis and Hennepin County, Minnesota, created a calculated priority rating index for their Threat and Hazard Identification and Risk Assessment. The index measures the probability and magnitude of their threats and hazards, helping them to identify their capabilities of greatest need and to effectively prioritize resilience investments.

UNIVERSITY OF ALASKA

University of Alaska Fairbanks launched The Modern Blanket Toss, a program where students from local high schools developed and operated unmanned aircraft systems that



took aerial photographs of hard-to-access areas in order to help local community leaders evaluate future flood risks.

NOAA

NOAA and the University of Nebraska–Lincoln jointly created the new Drought Risk Management Research Center, which focuses on improving drought monitoring and risk management for Federal, state, tribal, and local partners.

COMMUNITY RESILIENCE CENTER OF EXCELLENCE

In 2015, NIST entered into a cooperative agreement with a team of 11 universities, led by Colorado State University, to



establish the Community Resilience Center of Excellence. The focus of the Center is to develop models and tools to assess the resilience of communities and support decisions for investment in local infrastructure that reduce the impact and burden of natural and manmade disasters.

HHS

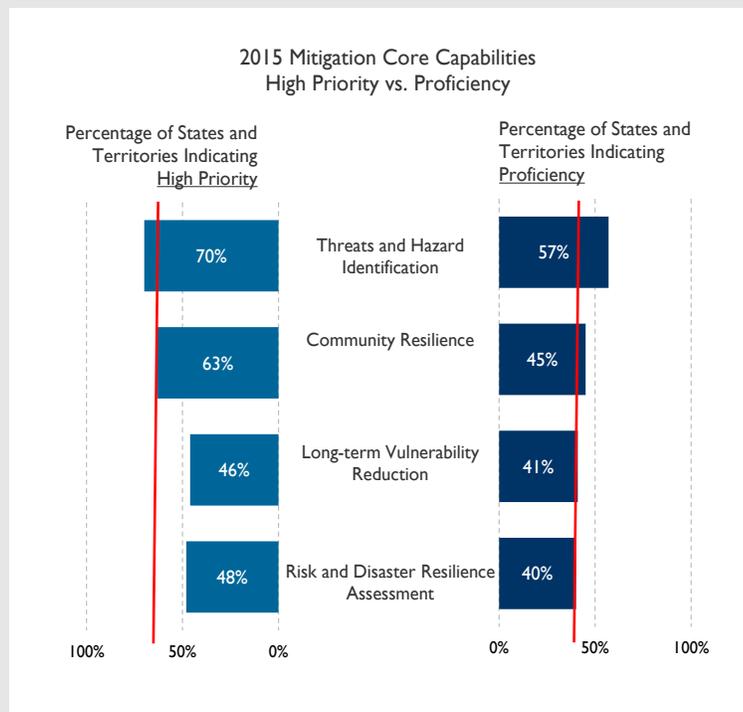
HHS launched the HHS emPOWER Map, which is a public, interactive map that uses Federal health data and NOAA severe-weather services to help Federal, state, local, and community partners anticipate, plan for, and respond to the needs of electricity-dependent individuals, whose lives may be threatened or lost by a severe weather–induced power outage.

STATE PERSPECTIVES ON PREPAREDNESS

2015 State Preparedness Report Results

- Since 2012, states and territories have reported a six percentage-point increase in proficiency ratings among Mitigation core capabilities, the largest proficiency increase of all the mission areas during that time period.
- Two of the top-five capabilities with the largest increase in proficiency percentage since 2012—Threats and Hazard Identification and Community Resilience—are Mitigation core capabilities. Since 2012, proficiency in Threats and Hazard Identification capabilities increased by 14 percentage points, while proficiency in Community Resilience capabilities increased by 9 percentage points.
- States and territories rated Threats and Hazard Identification as one of the top-five capabilities with the highest self-assessed proficiency ratings in 2015.

Notes: Vertical red lines (|) indicate the average rating for all core capabilities. The chart and statements do not include contributions from the three cross-cutting core capabilities—Planning, Operational Coordination, and Public Information and Warning



Mitigation Mission Area

KEY FINDINGS

Key Finding: The Nation has become progressively more vulnerable to dam failures and continues to face challenges repairing and identifying structurally impaired dams whose failure could severely affect nearby communities.

In October 2015, historic levels of rainfall in South Carolina caused the Overcreek Dam to fail, releasing a torrent of floodwater and resulting in a mandatory evacuation order for nearby residents. This failure was only one of 32 dam breaches that produced severe flooding statewide from that storm, and contributed to the estimated \$18 billion in damages as a result of this incident. The South Carolina dam breaches show what can happen when structurally impaired dams are tested by a major flooding event. Nationwide, this risk has grown over time, as population growth has led to additional settlement below dams. This settlement trend has expanded the size of the population vulnerable to dam failures and has increased the number of dams for which failure would likely lead to loss of life. USACE reports that the number of state-regulated “high-hazard potential” dams (i.e., dams with a potentially severe impact on communities in the event of a breach) has been growing steadily for more than a decade (see Figure 7).

State-Regulated High-Hazard Potential Dams

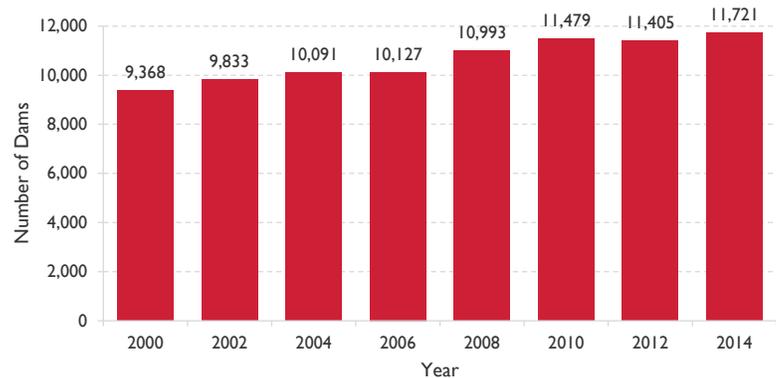


Figure 7: The number of state-regulated high-hazard potential dams has increased nationwide since 2000. [Note: The methodology for collecting data has changed during this period.]

As the number of dams whose potential failure threatens life and property grows every year, dam maintenance and monitoring is also a concern. South Carolina dam inspectors had previously cited many of the 32 dams that breached during the 2015 floods for deficiencies in need of repair, including one dam that was known to have an inadequate spillway system since 1979. From 1999 to 2013, the number of state-regulated high-hazard potential dams reported as in need of remediation nationwide has risen from approximately 500 to 1,700. In contrast, only 100 to 200 dams were repaired annually during those years, indicating a significant backlog. Of the 1,638 state-regulated high-hazard potential dams that were found to be in need of remediation reported to USACE in 2014, only 186 were repaired that year. The low number may be due to the high costs associated with repairs—the Association of State Dam Safety Officials estimated that fixing all of the Nation’s aging and degrading dams would cost \$54 billion.



Navigable Waterways

Deficient locks at inland waterways can disrupt supply chains for items such as food and petroleum. A 2015 report by the DHS Office of Cyber and Infrastructure Analysis found that 54 percent of locks serving the Inland Marine Transportation System have exceeded their design limit of 50 years, and 36 percent are more than 70 years old. Many of these locks are in need of repair or replacement. The number of unscheduled closures resulting from broken locks has more than doubled since 2000.

Key Finding: The effects of climate change are a growing concern, and members of the public and private sectors are increasingly taking steps to prepare for the impacts.

In December 2015, more than 190 countries—including the United States—convened in Paris for the 21st conference hosted by the United Nations Framework Convention on Climate Change. Concerns about climate change have risen in recent years. For example, climate change increases the frequency and intensity of extreme weather incidents. A 2015 report by NOAA and the American Meteorological Society found that climate change exacerbated some weather events in 2014, including severe heat waves and the North American winter storm season. The study’s authors concluded that climate change will continue to contribute to extreme weather in the future, helping to bring about more common tropical storms, growing likelihood of wildland fires, and aggravated coastal flooding due to sea level rise. Increased severe weather has serious implications for communities—both because it leads to more extensive and costlier damage and because it disrupts access to critical infrastructure, such as the electrical grid. In 2015, 10 weather events in the United States each had losses exceeding one billion dollars, and collectively resulted in 155 fatalities. A recent report by Climate Central and ICF International emphasizes the importance of improving preparedness for climate-related threats.



To prepare for these impacts from climate change, the Federal Government has taken steps to build the Nation’s resilience to extreme weather:

- The Corporation for National and Community Service, DOE, EPA, NOAA, and their private-sector partners announced the new Resilience AmeriCorps pilot program in July 2015. The program trains members to help low-income communities implement projects—such as providing flood preparedness and response training—to build resilience against extreme weather events and other impacts of climate change. In January 2016, Resilience AmeriCorps members began service in 10 pilot communities. Program expansion in additional communities throughout the United States is underway with additional partners.
- In addition to supporting climate adaptation and resilience exercises, the FEMA National Exercise Division will host training seminars to teach local exercise planners and community members on how they can incorporate climate considerations into future exercises that they design and conduct. Through this approach, the National Exercise Division and National Security Council staff are seeking to build longer-term capability in communities to address local climate effects. In September 2015, FEMA conducted the first pilot seminar, which brought together community representatives from the Miami area.



In addition to its effect on weather, climate change plays a significant role in increasing health-related risks. Growing global average temperatures have led to more intense heat waves in recent years, which endanger people who are vulnerable to heat-related illness. Also, higher temperatures are expanding the geographic range of mosquitoes, which can spread diseases like the West Nile or Zika virus. In 2015, Federal and private actors implemented new projects to prepare for these growing public health threats:

- HHS partnered with a software company to host the Human Health and Climate Change App Challenge. Contestants developed ideas for apps to help public health professionals better understand the impacts of climate change on their communities. The winning app combined climate projections with socioeconomic heat vulnerability factors to enable leaders to improve community climate adaptation planning.
- NOAA, HHS, and DoD partnered with the National Science and Technology Council to launch the Dengue Forecasting Project, which will engage scientists in building a model to predict future dengue fever transmission.

Finally, an emerging area of concern is the impact of climate change on national security. The 2015 *National Security Strategy* discussed the connection between climate change and national security. Among other topics, many academic studies in 2015 explored how climate change negatively affects sectors such as agriculture and water, thus threatening food security and contributing to poverty and political instability that can enable terrorist activity. Governmental and private entities are still in the early stages of exploring strategies to address this potential link.

Key Finding: The energy, transportation, and health sectors have taken steps to generate ideas, tools, and metrics for increasing critical infrastructure resilience, but reducing vulnerabilities remains a challenge, given increasing impacts from climate change and limited resources available for maintenance.

In 2014, DHS's Quadrennial Homeland Security Review found that natural hazards are becoming more costly to address, in part due to trends such as climate change and aging infrastructure. As reported in the 2015 *National Preparedness Report*, individual stakeholders have limited resources available to maintain critical infrastructure, making reducing vulnerabilities to the impacts of climate change an even greater challenge. The President's 2013 *Climate Action Plan* included goals related to strengthening energy, transportation, and public health critical infrastructure.

In 2015, DOE took several actions to address climate-related threats for the energy sector. In April, DOE published the first-ever *Quadrennial Energy Review*, which explores options for modernizing the Nation's energy infrastructure and presents recommendations for enhancing the resilience of the energy sector against climate-related threats. As part of the review's release, DOE announced the Partnership for Energy Sector Climate Resilience, which engages owners and operators of energy utilities to develop and pursue strategies to reduce climate- and weather-related vulnerabilities. To further support the *Quadrennial Energy Review*, DOE released the *Conceptual Framework for Developing Resilience Metrics for the Electricity, Oil, and Gas Sectors in the United States* in September 2015. This report addresses measuring and increasing energy resilience, including a general framework for defining resilience metrics and procedures for analyzing, quantifying, and planning for the resilience of energy infrastructure systems. Additionally, DOE launched a State Energy Risk Assessment Initiative and released *Climate Change and the U.S. Energy Sector: Regional Vulnerabilities and Resilience Solutions* to help states and regions better understand their energy-sector vulnerabilities and adopt the most effective resilience strategies. Under the State Energy Risk Assessment Initiative, DOE developed a risk profile for each state, which details state energy assets' vulnerabilities to extreme weather events.

Federal and nongovernmental partners also collaborated on initiatives to identify and reduce climate-related vulnerabilities in the transportation systems sector. In September 2015, the Transportation Research Board, the Federal Highway Administration, the Federal Transit Administration, and the American Association of State Highway and Transportation Officials held the first-ever "International Conference on Surface Transportation System Resilience to Climate Change and Extreme Weather Events." The conference provided an opportunity for subject-



matter experts from transportation and other disciplines to share methodologies for examining cost-effective and resilient decision-making. Participants highlighted approaches and tools that can be used to integrate climate information and risks in the entire transportation lifecycle, from planning and infrastructure design through operations and maintenance. In addition, the Federal Highway Administration funded 19 pilot projects on state transportation climate resilience, which were completed in 2014 and 2015. For example, the Iowa Department of Transportation developed a methodology to evaluate the vulnerability of bridges to climate change and extreme weather, and plans to integrate the new data into its real-time bridge monitoring and alert systems.

Federal agencies have also produced new tools and standards to strengthen the resilience of healthcare infrastructure (e.g., hospitals) against climate change. HHS released a new climate toolkit for the healthcare industry as part of its Sustainable and Climate Resilient Health Care Facilities Initiative. The web-based toolkit includes a five-part framework that healthcare facilities can use to perform vulnerability assessments and develop resilience-building initiatives. In addition, the U.S. Department of Veterans Affairs (VA) published new standards related to sea level rise, to which all future VA construction and renovation projects—including VA hospitals—must adhere. This will improve the resilience of VA buildings against hazards exacerbated by higher sea levels, such as flooding from coastal storms.



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PREPAREDNESS CASE STUDY:
 WATER UTILITY CLIMATE ADAPTATION PLANNING

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The town of Manchester-by-the-Sea, Massachusetts, took preemptive measures to protect its wastewater management infrastructure from the negative effects of climate change. Anticipating that mitigation measures might cost less than post-disaster repairs, Manchester-by-the-Sea partnered with EPA to jointly assess the risks to the town’s wastewater treatment plant—a facility located next to the ocean and less than 10 feet above sea level. Using EPA’s Climate Resilience Evaluation and Awareness Tool, the town analyzed projected threats from flooding and sea level rise. The town will use the information learned from this project to develop strategies for adapting the town’s wastewater treatment plant to these future hazards.

Key Finding: With evidence suggesting that fewer Americans developed a household emergency plan in 2015 than in 2014, Federal agencies and community partners attempted to increase the visibility of their messages by targeting individual communities and tying preparedness messages to notable events.

Individual preparedness is a key element of community resilience. However, FEMA’s 2015 National Household Survey suggests that room for improvement exists in this area, as the percentage of individuals who have developed and discussed a household emergency plan has fallen for two consecutive years—including a six-percentage-



point decrease from 2014 to 2015. Additionally, states and territories identified individual and family preparedness as their second-most common capability gap (48 percent) under the Long-term Vulnerability Reduction core capability in 2015 State Preparedness Report submissions. In 2015, Federal agencies and nongovernmental partners developed public outreach messages to counter this trend and encourage preparedness. For example, they sought to address preparedness gaps for particular populations, such as pet owners. The Ready Campaign and America's PrepareAthon! partnered with the White House to produce a pet-owner preparedness video titled, "Get Prepared with Bo and Sunny." In addition, USGS and advertising company Clear Channel Outdoor partnered to launch a new earthquake preparedness campaign targeted at Californians. Clear Channel Outdoor will donate space on digital billboards to encourage Californians to secure their businesses and homes before an earthquake.

Federal agencies and local jurisdictions also tied preparedness messaging to cultural and historic events, including the following:

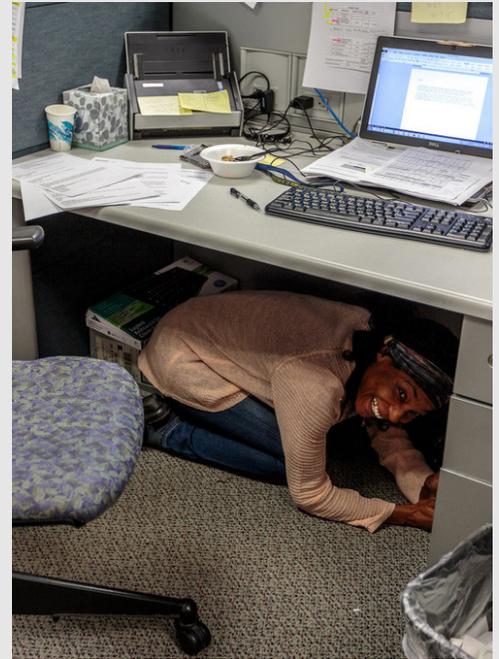
- The Ready Campaign partnered with the Advertising Council and Warner Bros. Entertainment, Inc. to produce a series of preparedness-focused public service announcements (via video) starring Dwayne Johnson and featuring scenes from the film "San Andreas." The public service announcements provided safety tips on how to reduce injuries and save lives during an earthquake.
- In commemoration of the 25th anniversary of the passage of the *Americans with Disabilities Act*, the FEMA Office of Disability Integration and Coordination worked with the FEMA Office of External Affairs, the Ready Campaign, and the Advertising Council to develop a public service announcement video called, "[We Prepare Every Day.](#)" The video portrays people with access and functional needs taking charge of their own disaster preparedness by staying informed, making a plan, building a preparedness kit, and getting involved. FEMA produced several versions of the video that incorporated accessible features such as open captioning, [American Sign Language interpretation](#), and [audio description](#).
- The Los Angeles County Office of Emergency Management conducted a series of youth-focused preparedness activities on Latino Children's Day. The county conducted activities in both Spanish and English, and partnered with local churches and school districts to encourage greater participation among children. Included among the various activities were CPR trainings led by the county fire department and an earthquake simulator for kids.
- City emergency management officials in Smyrna, Georgia partnered with the organizers of the Jonquil Festival to spread preparedness messaging. The Jonquil Festival is a springtime event that attracts more than 20,000 people over the course of one weekend. Smyrna emergency management staff engaged festival-goers by facilitating discussions on various preparedness topics, such as ensuring food safety during lengthy power outages. Attendees also participated in a tornado drill at the festival.
- A winner of FEMA's 2015 Individual and Community Preparedness Awards, New York City Emergency



Management’s Community Outreach Unit produced “The Storm,” the tenth installment of the Emmy award-winning “We Are New York” series geared towards English-language learners. The 25-minute episode focuses on emergency preparedness and access to city resources during emergencies.

PREPAREDNESS CASE STUDY:
AMERICA’S PREPAREATHON!

Millions of individuals participated in more than 1,700 PrepareAthon! activities nationwide in 2015. *Presidential Policy Directive 8: National Preparedness* called for a comprehensive campaign to build and sustain preparedness, including public outreach and community-based and private-sector programs. America’s PrepareAthon! addresses this directive by supporting grassroots efforts to increase community preparedness and resilience through hazard-specific group discussions, drills, and exercises. To facilitate public outreach and community-based events, the PrepareAthon! website identifies 10 ways that individuals can participate in preparedness activities, as well as tools to locate and plan preparedness events. In 2015, 61 percent of PrepareAthon! activities involved participation in a class, training, or discussion; 39 percent addressed access alerts and warnings; and 36 percent involved a drill or practicing emergency response (please note that categories are not mutually exclusive).



Access Alerts and Warnings



Test Communication Plans



Assemble or Update Supplies



Drill or Practice Emergency Response



Plan with Neighbors

10 WAYS TO PARTICIPATE IN AMERICA'S *PrepareAthon!*



Participate in a Class, Training, or Discussion



Conduct an Exercise



Make Property Safer



Document and Insure Property



Safeguard Documents

Key Finding: While new research stemming from recent events demonstrates the value of mitigation, the Federal Government has not developed a strategic approach for investing in mitigation activities.

Communities in high-risk areas can limit future damage by choosing approaches that focus on either **risk avoidance** (e.g., removing individuals from the hazard area) or **risk reduction**, which reduces risk by improving resilience (e.g., hazard-specific building codes). In 2015, three analyses of recent real-world events provided additional confirmation of the benefits of both approaches.

Risk Avoidance:

- Harris County (Houston), Texas, combined local funding and FEMA Hazard Mitigation Grant Program funding to create a program for homeowners who had experienced repetitive flood losses to sell their homes to the county at market value. The county turned the underlying land into open space, and prohibited any future construction in the area. Had this program not existed prior to the 2015 Memorial Day floods, Harris County would have had a projected 550 additional homes flooded, and approximately \$12.4 million in additional losses.



Risk Reduction:

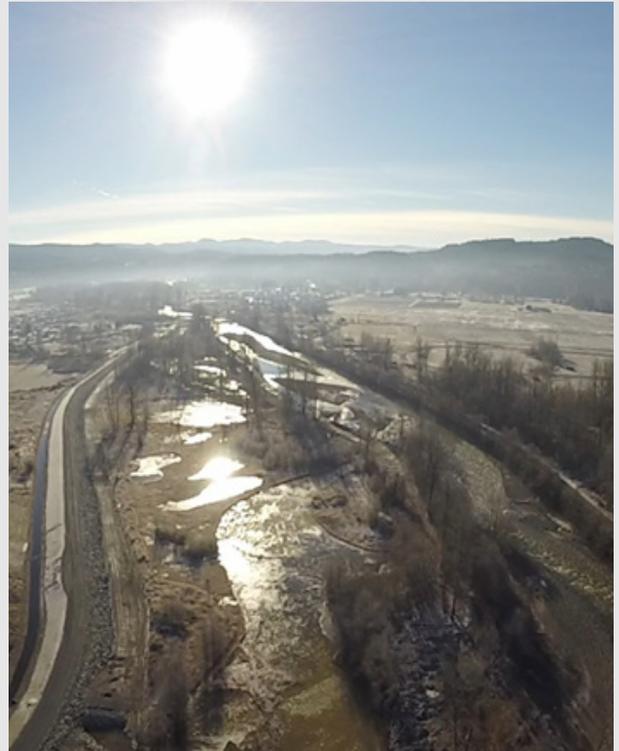
- After a May 2013 tornado destroyed much of Moore, Oklahoma, Cleveland County (where Moore is located) adopted a building code that requires new houses to withstand 135-mile-per-hour winds, up from 90 miles per hour in the previous code. The cost of this adjustment is minor (approximately one dollar per square foot). However, a 2015 study by the American Meteorological Society projected that if all houses in Oklahoma were built to the standard adopted in Cleveland County, the new building codes would yield a net present value of \$10.7 billion in losses avoided over the next 50 years, resulting in a 320 percent return on investment.
- The September 2013 floods in Colorado devastated many areas across the state, including Boulder, where floods destroyed 262 homes and damaged 300 more. Although the flooding was severe, Boulder County's previous investment in building codes—which required construction above the base flood elevation—prevented the damage from being much worse. A 2015 study found that if Boulder County had not adopted the higher standard, 1,500 more structures would have been affected, causing an additional \$1.5 billion in damage. Even taking into consideration the cost of implementing the stronger building codes, the same level of recovery would have cost Boulder County 331 percent more if they had not adopted the higher standards.



While investments in risk avoidance and reduction have proven successful, a July 2015 GAO report found that the Federal interagency does not have a comprehensive, strategic approach for identifying, prioritizing, and implementing investments for disaster resilience. In response to this, the Mitigation Framework Leadership Group has established a Federal Disaster Mitigation and Resilience Investment Strategy Workgroup, to recommend a coordination process focused on developing long-term Federal investment priorities to sustain and enhance the Nation's mitigation core capabilities and increase resilience.

PREPAREDNESS CASE STUDY: FLOODPLAINS BY DESIGN

FEMA Region X, the Washington State Department of Ecology, and the Nature Conservancy jointly coordinate Washington's Floodplains by Design program, which invests in preparedness projects with ecological, economic, and community benefits. By focusing on projects that combine these benefits, the program is able to combine Federal, state, and local funding sources to support projects that might not have been funded under a project focused strictly on flood mitigation. One such project has already yielded results. In 2014, the town of Orting, Washington, used Floodplains by Design funding to replace old levees with new berms and ditches on the Puyallup River. This effort improved flood preparedness and restored the local salmon habitat. Whereas the town had experienced severe flooding in previous years, the Floodplains by Design project successfully protected the town during heavy rains in early 2015.



Key Finding: Federal agencies are successfully advocating updates to the most recent editions of building standards to help communities strengthen structural disaster resilience. While many jurisdictions continue to adopt stronger local building codes, a few states have passed legislation to weaken building codes.

Communities that adopt and enforce strong building codes can effectively reduce long-term vulnerability to natural hazards. To promote more resilient construction, FEMA successfully proposed stronger structural measures against tornadoes and floods for the 2015 revisions of key model building codes published by the International Code Council.



The International Code Council develops these consensus model building codes so that jurisdictions can easily adopt them, saving local governments the time and expense of developing their own. The updated 2015 International Building Code now requires new schools and first-responder facilities in areas prone to 250-mile-per-hour tornado winds to have tornado shelters. In addition, the 2015 International Residential Code included a new requirement that all new one- and two-family buildings in areas at high risk for flooding be elevated one foot higher than the minimum base flood elevation.

Federal agencies are also developing new guidance and standards for future building projects. In October 2015, NIST released the *Community Resilience Planning Guide for Buildings and Infrastructure Systems*, which lays out a six-step process that communities can follow to develop resilience plans, adapt to changing conditions, and withstand disruption from hazards. Federal agencies are also in the process of implementing the amended *Executive Order 11988, Floodplain Management*; and

Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input. The new Federal Flood Risk Management Standard requires future Federal investments in and affecting floodplains to meet this standard, which uses a higher vertical flood elevation (and corresponding horizontal floodplain) to address current and future flood risk and ensure that federally funded projects last as long as intended. Similarly, the President issued *Executive Order 13717: Establishing a Federal Earthquake Risk Management Standard* in February 2016. Under this new standard, Federal agencies responsible for designing or constructing a new building must ensure that the building adheres to earthquake-resistant design provisions in the most current building codes. This measure will improve the ability of Federal buildings to function after an earthquake.

Overall, states and local governments have also continued to make progress in enacting stronger building codes. As discussed in the 2014 *National Preparedness Report*, local jurisdiction rates of adoption for hazard-specific, disaster-resilient building codes rose from 56 percent in 2012 to 60 percent in 2013. As of 2015, that rate has continued the upward trend to 63 percent (see Figure 8). While jurisdictions have shown marked progress, a handful of states (Connecticut, Kentucky, Massachusetts, North Carolina, and Rhode Island) have enacted amendments that weaken existing building codes. For example, the North Carolina Building Code Council approved a provision to allow lower wind-speed bracing requirements in regions prone to higher winds. Additionally, Rhode Island modified its code to allow partially enclosed buildings, which are more vulnerable to wind and water damage during a storm.

A 2015 report by the Insurance Institute for Building and Home Safety provides some specific examples of state and local progress. For example, since 2012, Virginia has become a nationwide leader in building-code safety. Most notably, every locality in Virginia's tidewater region now requires homes in designated flood zones to be elevated three feet above the National Flood Insurance Program's minimum height requirements. The Insurance Institute for Building and Home Safety also reported that, in 2014, Mississippi enacted its first-ever statewide building-code law, which allows cities and counties to adopt any of the 2006, 2009, and 2012 editions of the International Residential Code. Prior to enactment of this law, only seven counties were required to enforce the wind and flood requirements of the 2003 International Residential Code. The Mississippi law, however, allows jurisdictions to opt out of the standards, which reduces the law's effectiveness. In addition, Los Angeles, California, passed a historic, building retrofit ordinance in October 2015 to ensure that the city's most vulnerable buildings can withstand the effects of a major earthquake.

Nationwide Rates of Adoption for Disaster-Resilient Building Codes (Local Jurisdictions)

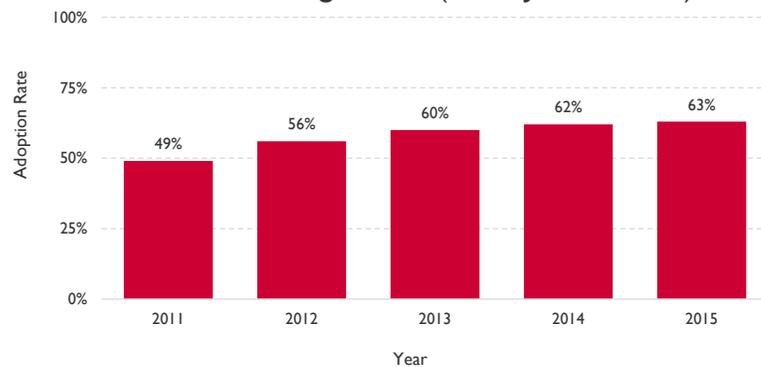


Figure 8: Since 2011, the rate of adoption for local disaster-resilient building codes has risen 14 percentage points.

Key Finding: Studies and real-world examples have demonstrated resilience benefits from investments in natural infrastructure, and the Federal Government is encouraging broader adoption of these techniques by providing new planning tools and resources.

The 2015 *National Preparedness Report* described Federal Government efforts to investigate the potential disaster mitigation benefits of green infrastructure, including natural features such as dunes, vegetation, and marshland. Since then, recent scientific research and real-world events have demonstrated that green infrastructure can effectively reduce vulnerabilities to natural hazards. The nongovernmental organization Earth Economics released a study estimating that the Central Puget Sound's wetlands save the area's economy up to \$7,607 per acre per year. While NOAA had previously reported that wetlands can reduce storm surge by up to 60 percent in a watershed area, a new NOAA-sponsored report added that natural infrastructure features such as marshes, reefs, and beaches also

provide measurable benefits to coastal resilience. The same report also estimated that the storm protection benefits of all coastal wetlands in the United States have saved the country approximately \$23.2 billion per year since 1980.

Investments in green infrastructure have also proven effective during recent events. Dallas, Texas, which suffers from chronic flood problems, partnered with USACE and the DOI Fish and Wildlife Service in the early 1990s to create “chains of wetlands” designed to reduce the city’s risk of flooding. When the area experienced heavy rains in May 2015, these wetlands allowed rainwater to flow away from the city, rather than add to the flooding.

To help communities better understand the benefits of green infrastructure, Federal agencies are producing guides and tools. For example, NOAA produced a guide that offers a six-step procedure for documenting the costs of current flooding, predicting the costs of future flooding, and determining the benefits of green infrastructure for reducing flood risks. In addition, EPA created the Green Infrastructure Wizard, a web application that helps communities access the tools and resources they need to design and construct their own green infrastructure.

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PREPAREDNESS CASE STUDY: NEW ORLEANS’S GREEN INFRASTRUCTURE

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New Orleans, Louisiana, is incorporating green infrastructure into numerous mitigation projects, recognizing that this strategy is integral to reducing disaster risk. New Orleans’s Coastal Protection and Restoration Authority recently completed 14 coastal restoration projects, with another 28 similar projects currently underway. Restoring and preserving natural features (e.g., beaches, dunes, marshes, wetlands) help to reduce the risk of flooding from the tropical cyclones that threaten the city. Additionally, New Orleans has included green infrastructure in its most recent Comprehensive Zoning Ordinance. For the first time, the ordinance limits development of “natural areas” to preserve their associated flood-protection benefits, and mandates that at least 50 percent of all landscaped areas be designed, constructed, and maintained as green flood-infrastructure features.



Key Finding: New research highlights the risk of longer and more intense droughts in the future. Federal agencies have improved interagency coordination for collaborating with states, tribes, and communities to build drought resilience.

In 2015, parts of the United States—particularly the Southwest—continued to experience severe drought conditions for a fifth consecutive year. At the end of 2015, nearly 45 percent of California was experiencing an “Exceptional Drought,” the most severe U.S. Drought Monitor category.

New research predicts that the length and intensity of droughts in the southwestern region of the United States will only increase. For example, scientists at the National Center for Atmospheric Research determined that the weather patterns typically bringing moisture to the southwestern United States are becoming rarer. This corroborates an earlier February 2015 study by the National Aeronautics and Space Administration (NASA), which projected that future droughts in the Southwest and the Central Plains could be drier and longer in coming years. According to the NASA study, a megadrought (i.e., a drought lasting more than three decades) has an 80 percent chance of occurring in the latter half of the 21st century, given status-quo projections for climate change.

While the southwestern region of the United States is becoming particularly at-risk for drought, drought is a concern nationwide. The 2015 *National Preparedness Report* described how severe drought was afflicting much of the United States in 2014. From 2009 to 2014, drought conditions cost the United States more than \$57 billion dollars. In 2015, USDA issued drought disaster designations for 1,056 counties across the Nation.



To address these challenges and improve drought preparedness, Federal partners are working to strengthen coordination and implement new projects. As part of his 2013 *Climate Action Plan*, the President created the National Drought Resilience Partnership, a group of seven Federal agencies that works to coordinate Federal drought policies and programs and that serves as a single point of contact in support of state, tribal, and community efforts. In July 2015, the partnership held a White House Drought Symposium, which explored opportunities to improve the long-term sustainability of water resources. Based on Federal actions presented at the symposium, the partnership agencies will develop a work plan to focus future agency efforts on drought resilience.

Another interagency group, the Climate Natural Resources Working Group of the Council on Climate Resilience and Preparedness, recommended the creation of the Resilient Lands and Waters Initiative to build resilience to climate change (including drought) for common types of land- and water-based terrain (e.g., wetlands, coastal reefs). In 2015, NOAA—working with Federal, state, tribal, and community partners—launched the initiative and chose its first project locations: California (two locations), southwest Florida, the Great Lakes, Hawaii, Montana, and Washington State.

To better measure resilience to hazards such as drought, the White House has convened an interagency working group effort to coordinate the development and taxonomy of indicators and metrics. This committee will work to ensure the uniformity of measurement tools and data, improving the overall picture of national preparedness for climate-related events.

Key Finding: Recognizing that wildland fires increase the likelihood of flooding, the Federal Government is promoting flood mitigation measures in areas recently affected by wildland fires.

Wildland fires increase the risk of flooding because they strip the earth of moisture and vegetation, which prevents soil from absorbing water. As of December 2015, wildland fires have burned 10,125,149 acres—setting a new record for the largest number of acres in a single year since 1960. Federal agencies launched new efforts in 2015 to help wildland-fire-affected communities reduce their future risk of flooding:

- After a wildland fire burned nearly 280,000 acres of land in Oregon and Idaho in August, the DOI Bureau of Land Management developed a rehabilitation plan for the burned areas. The plan proposed maintenance actions that divert floodwaters away from roads and trails to minimize the risk of flooding.
- The U.S. Forest Service (USFS) deployed their new Community Mitigation Assistance Team for the first time to Washington State to help communities affected by the August 2015 Chelan Complex Fire. The purpose of the team is to educate the public on



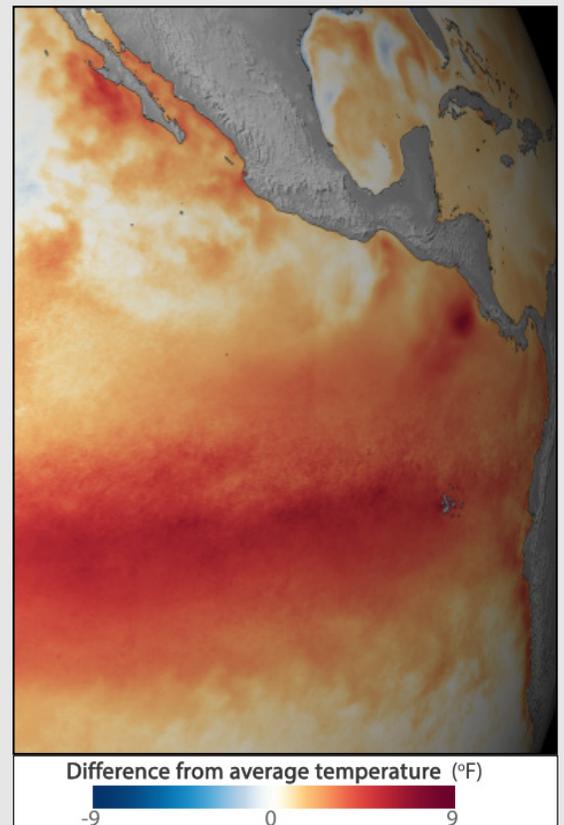
mitigation topics, including how communities can remove brush to prevent the spread of an active fire and mitigate the risks posed by flooding after a fire.

- NASA and USFS partnered to produce new, highly detailed maps of the areas of California affected by major wildland fires. USFS is currently using the maps to identify areas to target to reduce the post-fire risks of flooding and erosion.

In addition, FEMA launched the Fire Management Assistance Grant Program – Hazard Mitigation Grant Program Pilot in fiscal year 2015. This new pilot program makes available Hazard Mitigation Grant Program funding after a *Robert T. Stafford Disaster Relief and Emergency Assistance Act* fire declaration to help communities in burned areas finance post-fire, flood reduction projects. Previously, these communities had no access to Hazard Mitigation Grant Program funds for post-fire mitigation projects.

PREPAREDNESS CASE STUDY: PREPARING FOR A STRONG EL NIÑO

In 2015, FEMA launched efforts to spread preparedness information relating to the 2015–2016 El Niño event, projected to be one of the strongest on record. El Niño is a weather pattern that brings unusually high amounts of rain to the southwest region of the United States, as well as particularly intense storms to western states such as California. Since California may have experienced its worst drought in 500 years in 2015, the combination of drought, wildland fires, and a strong El Niño increases the risk of post-wildland-fire flooding in affected areas. In response, FEMA’s Floodsmart.gov has created a website specifically dedicated to informing the public about the dangers of El Niño, and encouraging people to purchase flood insurance as soon as possible. FEMA is also conducting media outreach to California to promote El Niño preparedness. FEMA Region IX also created an El Niño task force charged with developing plans and conducting preparedness outreach specific to El Niño. As a result of the task force’s actions, California saw an additional 55,599 new flood insurance policies purchased between August and December 2015—an increase of 24 percent.



Key Finding: In response to challenges exposed during the Hurricane Sandy claims process, the National Flood Insurance Program implemented program changes and pilot processes to improve customer experience.

Because risk cannot always be avoided, resilient communities engage in **risk transfer**—the act of securing resources from a third party—to pay for damage after a disaster, most commonly in the form of insurance. Risk transfer strengthens resilience by supplying communities with the necessary funds to rebuild quickly after a disaster. The National Flood Insurance Program was created in 1968, in part to provide insurance for those at risk of flooding. The National Flood Insurance Program, now housed within FEMA, has proven over time to be a valuable tool for managing flood risk. The claims process after Hurricane Sandy, however, demonstrated the importance of having reliable processes that identify errors and ensure that timely and adequate compensation is paid after a disaster.

In June 2015, the majority staff of the Senate Committee on Banking, Housing, and Urban Affairs released a report finding that, in order to reliably deliver fair compensation in a timely manner, “it is essential” for the National

Flood Insurance Program to implement strong processes for identifying payment errors, allowing policyholders to request additional payments, and appealing denials of coverage. To improve the National Flood Insurance Program's communication with their policyholders and overall customer experience (in effect, preparing the program to better respond to future flood events such as Hurricane Sandy), FEMA initiated or piloted several improvements detailed below.

Improvements in customer experience in 2015:

- FEMA stood up the office of the Flood Insurance Advocate to better support the interests of existing and prospective policyholders.
- FEMA plans to restructure the program so that there will be dedicated staff specifically to: provide appropriate oversight of private insurance providers; gather and use information to manage the delivery of the insurance product (including appeals); monitor the customer experience; and ensure that policyholders are served in their time of need.
- FEMA is working to understand and redesign the customer experience. As part of this effort, FEMA staff conducted a Customer Experience Diagnostic Survey to identify which aspects of the process are most important and most challenging for policyholders. The survey results provide new information that FEMA has never previously had.

Programs piloted during 2015 events:

- During the flooding events in Texas, Oklahoma, and South Carolina, FEMA offered training on best practices for the private claims adjusters who determine the amount a policyholder will receive for his or her claim.
- FEMA established a hotline, staffed by experts, to answer questions and address customer concerns in real time.
- FEMA conducted an exercise intended to identify weaknesses in the claims process and how to improve them. During the South Carolina floods, a Crisis Action Team implemented the lessons learned from the exercise.



Using Data to Target Future Needs

For incidents such as the South Carolina floods, FEMA has begun collecting data on National Flood Insurance Program policyholders to chart where rebuilding funds are being disbursed. By better understanding where and what types of assistance are provided, FEMA can pre-plan for Individual Assistance needs in future disasters.



Mission Area Overview

RESPONSE

Focused on ensuring that the Nation is able to respond effectively to all types of incidents, including those of catastrophic proportion that require marshalling the capabilities of the entire Nation

..... Key Finding Highlights



- A severe wildland-fire season led states and the Federal Government to supplement firefighting capabilities with volunteers and international support. (p. 70)
- Establishment of regional Ebola and other special pathogen treatment centers by HHS following the 2014 Ebola virus disease outbreak has enhanced the Nation’s response capabilities for emerging infectious disease. (p. 73)
- Highly pathogenic avian influenza prompted action by USDA, industry, and states and revealed gaps in waste management and biosecurity practices. (p. 75)

Core Capabilities in Practice

The Response mission area describes capabilities necessary to save lives, protect property and the environment, and meet basic human needs after an incident. The *National Response Framework* describes 15 core capabilities, including how they guide the Nation’s response to disasters and emergencies.

To effectively respond to an incident, emergency management officials within an affected community implement critical tasks under **Planning** to engage stakeholders in establishing objectives and strategies for the response, and they implement those under **Operational Coordination** to ensure that actions are carried out in an organized fashion. Through **Public Information and Warning**, officials deliver clear, actionable, and accessible information about relevant threats and hazards to the community. **Operational Communications** ensures emergency managers and responders can promptly exchange critical information. Throughout the response, decision makers use **Situational Assessment** to understand the extent and nature of the hazard and make informed choices.

Trained personnel conduct **Mass Search and Rescue Operations** to locate and rescue persons in distress. When a large number of deaths occur, **Fatality Management Services** recover fatalities and share information to help reunify families. During the response, officials protect both response workers and the public through **Environmental Response/Health and Safety** operations and **On-scene Security, Protection, and Law Enforcement**. For incidents involving fires, **Fire Management and Suppression** efforts protect lives, property, and the environment.

Public, private, and community-based organizations provide **Public Health, Healthcare, and Emergency Medical Services** and **Mass Care Services** to address the health and sheltering needs of survivors, including those with access and functional needs such as children, individuals

..... CORE CAPABILITIES IN THE RESPONSE MISSION AREA

- Critical Transportation
- Environmental Response / Health and Safety
- Fatality Management Services
- Fire Management and Suppression
- Infrastructure Systems
- Logistics and Supply Chain Management
- Mass Care Services
- Mass Search and Rescue Operations
- On-scene Security, Protection, and Law Enforcement
- Operational Communications
- Operational Coordination
- Planning
- Public Health, Healthcare, and Emergency Medical Services
- Public Information and Warning
- Situational Assessment

with disabilities, and older adults. Furthermore, officials use **Critical Transportation** and **Logistics and Supply Chain Management** to ensure that affected communities receive essential commodities and services. This aids owners and operators of **Infrastructure Systems** in restoring and revitalizing systems and services for the community. The following are examples of actions taken in 2015 that highlight the relationship among a select number of the 15 Response core capabilities:

Operational Coordination, Logistics and Supply Chain Management, Fire Management and Suppression, and Situational Assessment

In 2015, wildland firefighting operations successfully coordinated the deployment of local, regional, national, and international resources to support response efforts. USFS worked with jurisdictions to mobilize their All-Hazard Incident Management Teams, which are multi-agency, multi-jurisdiction teams activated for major or complex incidents. For example, a team from San Diego helped coordinate structural firefighting resources from five states to protect communities in Washington State threatened by wildland fires. To help responders allocate resources, the Civil Air Patrol flew 163 missions to provide aerial photography of wildland fires in five states.

Operational Communications and Situational Assessment

In January 2015, the Federal Communications Commission (FCC) adopted rules that improve location information obtained from 9-1-1 calls made indoors. Additionally, Federal, state, local, and tribal authorities continued to take steps to implement Next Generation 9-1-1, which will provide a nationwide, Internet Protocol-based emergency communications infrastructure that allows for voice and multimedia communications and improve emergency services for the public, dispatchers, and first responders. In January 2015, FCC chartered a task force, which issued four reports with recommendations for how Public Safety Answering Points (i.e., 9-1-1 centers) can optimize their [security](#), [operations](#), and [funding](#) as they migrate to Next Generation 9-1-1.

Mass Care Services

From October 1 to December 31, 2015, over 17,000 unaccompanied children crossed into the United States, more than double the number who arrived over the same period in 2014. To ensure sufficient shelter, the Office of Refugee Resettlement within HHS increased the capacity of shelter providers from 7,900 beds to approximately 8,400 beds in November, and added 1,400 temporary shelter beds in December.

Planning

Catastrophic planning received renewed attention in 2015. Throughout the year, FEMA conducted various events with state, local, and private-sector partners (e.g., orientations, planning meetings) in building towards a four-day exercise in June 2016 that will address a 9.0-magnitude earthquake in the Cascadia subduction zone—a 700-mile seismic fault line off the Pacific Northwest coast. In addition, a high-profile media article echoed this priority by detailing the potential devastation resulting from a large earthquake in the Cascadia subduction zone and subsequent tsunami. As shown in Figure 9, this was one of several efforts to improve catastrophic planning and preparedness.

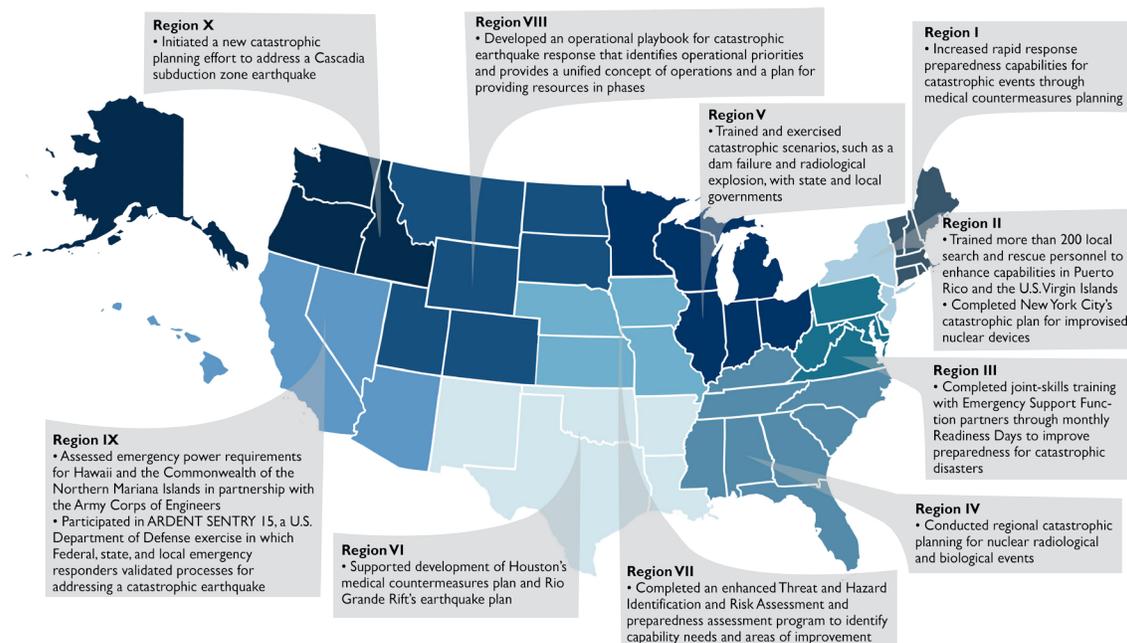


Figure 9: In 2015, efforts to strengthen catastrophic preparedness occurred in each of FEMA's 10 regions.



THEN and Now

Chemical, Biological, Radiological, Nuclear Response Enterprise

The 2012 *National Preparedness Report* discussed a growing number of assets under DoD's Chemical, Biological, Radiological, Nuclear Response Enterprise. Since then, the enterprise has achieved full operational capability. DoD has focused on ensuring effective integration of these assets with Federal, state, and local organizations through guidance and exercises such as VIGILANT GUARD and VIBRANT RESPONSE.

IPAWS

In 2011, commercial television and radio broadcast stations and cable television systems participating in IPAWS were able to deliver public information and warnings to 84 percent of the U.S. population. By 2015, this grew to more than 90 percent.

Distribution of Medical Countermeasures

The 2012 *National Preparedness Report* discussed how CDC conducted annual technical assistance reviews to assess state and local plans to receive and distribute medical assets from CDC's Strategic National Stockpile. While successfully used for a decade to assess planning, the assessment did not accurately reflect the ability of these jurisdictions to implement and execute their plans. As a result, CDC implemented a new review process designed to also assess operational capabilities in July 2015.

BY THE NUMBERS

465,869 HOURS

OF DISASTER RESPONSE ASSISTANCE

Members of FEMA Corps teams provided 465,869 hours of disaster response assistance across 22 states and Guam.

5,000 FAITH LEADERS

AND GOVERNMENT OFFICIALS

As of December 2015, the DHS Center for Faith-based and Neighborhood Partnerships conducted 10 regional trainings and more than 30 in-person and virtual presentations to educate more than 5,000 faith leaders and government personnel on the *Guide for Developing High-Quality Emergency Operations Plans for Houses of Worship*.

2,664 COMMUNITY EMERGENCY

RESPONSE TEAM PROGRAMS

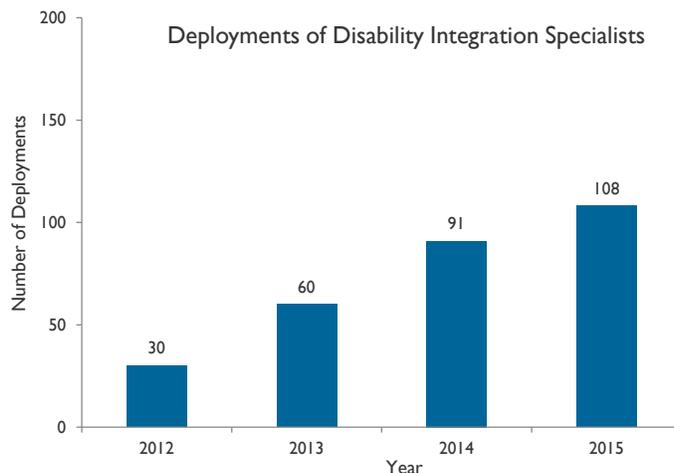
FEMA registered 181 new Community Emergency Response Team programs, which train community members in basic disaster response skills and organize them into teams of volunteers, raising the total number of programs to 2,664.



PREPAREDNESS TRENDS AND FIGURES

Building National Capacity for Inclusive Emergency Management

To support the equal physical access, effective communication access, and programmatic access of individuals with disabilities and others with access and functional needs, the FEMA Office of Disability Integration and Coordination established a cadre of disability integration specialists, who are providing guidance and technical assistance to ensure that disaster response and recovery efforts are fully inclusive. Between 2012 and 2015, FEMA deployments of disability integration advisors supported disaster responses, exercises, training, mitigation activities, and long-term recovery efforts. During this period, these deployments increased by 260 percent—from 30 deployments in 2012, to 108 in 2015. The cadre includes full-time Disability Integration Advisors on each of FEMA's National Incident Management Assistance Teams, as well as a full-time Regional Disability Integration Specialist in each of the 10 FEMA Regions.



PREPAREDNESS SNAPSHOTS



SAIPAN

In Saipan, Typhoon Soudelor rendered 48 percent of the island's power grid inoperable, leaving residents without power and with limited access to potable water. In response to the water shortage, DoD distributed more than 300,000 gallons of water. United 4 Saipan, a grassroots volunteer group, provided water and food to survivors and continues to organize debris removal events. Ten AmeriCorps Disaster Response Team members and a Corporation for National and Community Service member worked with voluntary organizations active in disasters from Saipan to establish a volunteer coordination structure and train local volunteers. Thirty personnel from the Guam Power Authority supported power restoration efforts on Saipan, and the California Utilities Emergency Association and Pacific Power Association worked directly with the Commonwealth Utilities Corporation to contract materials and supplies.

WASHINGTON AND CALIFORNIA

A member of the Muckleshoot Teen Community Emergency Response Team from the Muckleshoot Indian Reservation in



National Voluntary Organizations Active in Disaster

Washington State and native youth from Sherman Indian High School—a Bureau of Indian Education school in Riverside, California—presented projects they have implemented in their communities at the National Congress of American Indians annual conference. Projects included developing a video on active-shooter preparedness, creating a poster in the languages of Native Americans living in California to alert native citizens of fault lines in the state, and making emergency backpacks for community elders.

NATIONAL VOLUNTARY ORGANIZATIONS ACTIVE IN DISASTERS

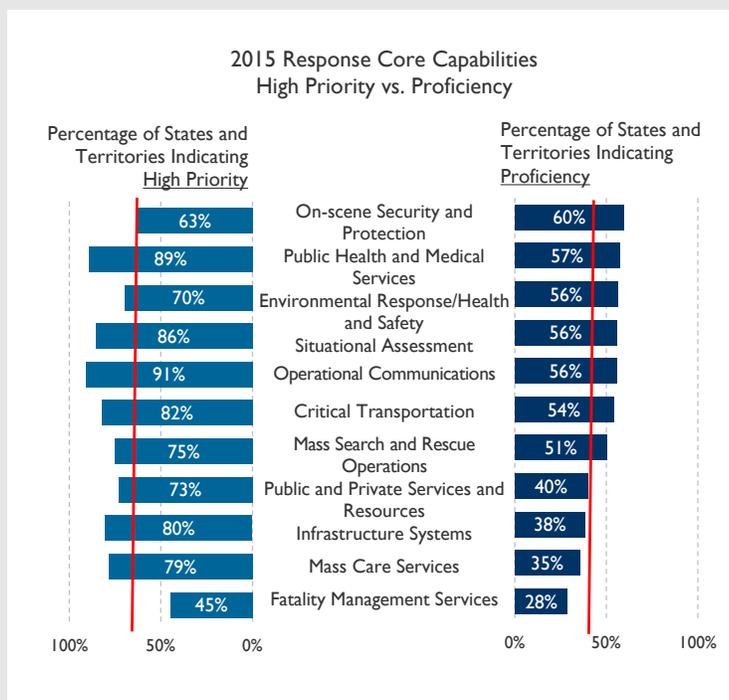
In 2015, the [National Voluntary Organizations Active in Disasters](#) launched VOADnet, an online, interactive platform for member organizations. This platform enables members to communicate and coordinate requests for and sharing of needed resources during disasters, as well as share best practices and lessons learned. Members used the website for disasters such as the South Carolina floods, western wildland fires, and the Pacific typhoons.

STATE PERSPECTIVES ON PREPAREDNESS

2015 State Preparedness Report Results

- Response core capabilities with higher priority ratings generally had higher proficiency ratings. Both On-scene Security and Protection and Environmental Response/Health and Safety, however, were among the top 10 capabilities in proficiency (among all 31 core capabilities), but fell outside the top 10 in priority.
- Except for Infrastructure Systems, states and territories rated themselves as less proficient in every Response core capability in 2015 (compared to 2014). Public Health and Medical Services, and Mass Care Services experienced the largest decreases in proficiency among all Response core capabilities, at 3.2 and 3.0 percentage points, respectively.

Notes: Vertical red lines (|) indicate the average rating for all core capabilities. The chart and statements do not include contributions from the three cross-cutting core capabilities—Planning, Operational Coordination, and Public Information and Warning.





Key Finding: The severe 2015 wildland fire season strained fire suppression resources, and volunteers and international partners supplemented the response of states and the Federal Government.

Large, intense wildland fires have occurred more frequently in recent decades, and the 2015 wildland fire season was especially severe. A total of 10,125,149 acres burned in 2015, setting a new record for the highest total number of acres burned in the United States in a single year since 1960. Severe droughts dried out vegetation, contributing fuel for the rapid spread of wildland fires. As climate change causes temperatures to rise and droughts to become more severe, particularly in the western United States, scientists predict that the trend of more frequently occurring, larger wildland fires will continue.

The number and severity of fires in 2015 strained existing local, state, and Federal fire suppression resources. Wildland fires occurred simultaneously among western states, and, as a result, equipment and personnel typically available through mutual aid agreements were already deployed, requiring states to turn to community partners for assistance. In Washington, the state’s Department of Natural Resources recruited and trained citizen volunteers to support wildland firefighting efforts. The Bureau of Land Management partnered with Team Rubicon, a veteran-led disaster response nonprofit organization. Together, they trained 195 Team Rubicon volunteers, with more than 100 volunteers providing assistance as frontline firefighters, public information officers, radio operators, documentation unit leaders, and safety officers.



International assistance complemented Federal and state government efforts to augment wildland fire response capabilities. Through international agreements with Canada, Australia, and New Zealand, USFS mobilized aircraft and 58 personnel from Canada, and 68 personnel from Australia and New Zealand for wildland fire response. The last times that New Zealand and Australia supported U.S. wildland firefighting operations were in 2006 and 2008, respectively.

Table 2: The Consequences of Wildland Fires in Select States

STATE	ASSISTANCE
ALASKA	The 2015 wildland fire season was the worst on record in Alaska’s history. The state, through mutual-aid compacts with Washington and Montana, received resource assistance from Canada.
CALIFORNIA	California was one of the most affected states in 2015, with 8,745 fires that burned 893,362 acres. Officials processed more than 33,000 resource requests through the state’s mutual-aid system.
WASHINGTON	The Okanogan Complex fire, the largest in Washington in terms of affected area, claimed the lives of three firefighters and severely injured another, forced thousands of people from multiple towns to evacuate, and severely affected the economy and lives of members of the Colville Indian Reservation, who depend on timber, hunting, and ranching for their livelihoods.



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PREPAREDNESS CASE STUDY: ADDRESSING THE RESPONSE CHALLENGES POSED BY THE WILDLAND-URBAN INTERFACE

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Increased development in the zone where natural areas, including forests, and development meet—known as the wildland-urban interface—has compounded wildland firefighting challenges. Since 1990, 60 percent of new U.S. homes have been built in these areas, which are growing by 4,000 acres per day (or nearly 2 million acres per year). The increasing density of people and infrastructure near forests complicates decision making and fire management practices for firefighters, and requires more firefighting assets to ensure an effective response that protects lives and property.

To reduce the risks posed by the wildland-urban interface and wildland fires, the White House, in partnership with the U.S. Fire Administration and other Federal partners, hosted a Fire Chiefs' Roundtable in November 2015. More than 37 fire chiefs and representatives from local, state, tribal, national, and international professional fire associations shared lessons learned and best practices to address these risks. Attendees committed to further enhancing resilience in their own communities by ensuring firefighters have the information, training, and resources required to handle current and growing threats from climate change in the wildland-urban interface.

Key Finding: Across the Nation, government agencies and industry partners have taken steps to secure the movement of shale crude oil by rail and prepare communities to respond to rail incidents involving crude oil. However, challenges remain in implementing railcar safety standards, training first responders, and sharing information between the rail industry and state and local communities.

Increasing transportation of shale crude oil by rail continues to stress the Nation's ability to safeguard against the risks this volatile, hazardous liquid poses to communities and the environment. Rail lines are carrying higher volumes of crude oil than ever before through densely populated areas and near sensitive infrastructure (e.g., hospitals, schools, government buildings). Domestic rail shipments of crude oil, including shale crude oil, grew from more than 20 million barrels in 2010 to nearly 280 million barrels in 2015—an increase of nearly 1,300 percent.

The Federal Government undertook several initiatives in 2015 to address the risks of crude oil by rail, but challenges persist due to delays in implementing new railcar standards, and shortfalls in first-responder training and information sharing. The U.S. Department of Transportation (DOT) issued regulations in May 2015 to safeguard the transport of oil products by rail and minimize the risks of derailment or collision. These regulations require sturdier tankers, electronic brakes, speed reductions, and second locomotives for large hauls, with some rules entering into force as early as October 2015. Meanwhile, the *Rail Safety Improvement Act of 2008* mandated implementation of automated systems for rail safety (i.e., positive train control systems) by the end of 2015. Despite a \$6 billion investment, however, the rail industry has been unable to meet this deadline. In October 2015, Congress extended the implementation timeline for these automated systems by an additional three years, which prevented a shutdown of

nationwide rail traffic.

In addition to regulatory action, DOT, EPA, and FEMA collected information from 48 states and the District of Columbia on their preparedness efforts for responding to, and mitigating the impacts of, crude oil by rail incidents. The majority of states reported that their response plans for hazardous materials are sufficient to manage a crude-oil train derailment. However, 23 states—including seven in the highest threat tier—reported shortfalls in first-responder training. States attributed these shortfalls to shortages in local responder staffing, which prevent responders from taking leave to attend specialized training courses.

Challenges also remain in information sharing between the rail industry and first responders. States consistently noted that routing information (which rail carriers are required to report) does not provide enough detail on shipment dates and locations in order for local responders to identify communities at risk. States also noted that they would like the rail industry to notify them of all shipments of crude oil transported through their communities. The rail industry is currently required only to notify states of shipments that exceed one million gallons of crude oil per train. DOT continues to work with state emergency responder committees on improving information sharing.

To help state, local, and tribal first responders prepare for and respond to incidents involving crude oil, DOT, EPA, and FEMA released a catalogue of Federal programs and resources in June 2015. The catalogue includes information on incident planning and response programs, exercise toolkits, and courses designed to enhance community preparedness for rail transportation of crude oil and other flammable liquids. In addition, in 2015, Federal partners conducted new shale crude oil-related preparedness efforts, including the following:

- As part of the FEMA National Exercise Program, FEMA, DOT, and EPA sponsored three workshops to enhance community-based planning for transportation incidents, including those involving crude oil. In total, 327 Federal, state, local, tribal, private-sector, and nongovernmental representatives participated. Issues identified in these workshops were incorporated into the 2015 Spill of National Significance Exercise, a three-part series of discussion-based exercises that addressed a notional oil train derailment and subsequent spill into the Columbia River. The exercises allowed responders and officials at local, tribal, state, and Federal levels to identify critical decision points and familiarize themselves with organizational structures and procedures.
- Transportation Technology Center, Incorporated, a member of the National Domestic Preparedness Consortium, developed a training course at the Security and Emergency Response Training Center in Pueblo, Colorado, on responding to crude-oil incidents. Freight rail carriers continued to provide funding to send first responders to this and other courses at the training center.
- In May 2015, DOT released the web-based “Transportation Rail Incident Preparedness & Response,” which offers a flexible approach to training first responders and emergency personnel on best practices for pre-incident planning and response to rail incidents involving flammable liquids.

In addition to federally supported resources, rail companies have invested in safety practices associated with transporting shale crude oil. Industry partners continued to fund training and exercise opportunities for local first responders. Freight rail carriers have also increased track inspections, invested in trackside safety technology, and developed inventories of emergency response resources and equipment specific to crude-oil spills and fires. These investments helped address capability gaps to meet the growing risks of crude-oil-by-rail incidents.



Key Finding: Federal agencies and state and local health organizations have taken actions to enhance the Nation's response capabilities following challenges encountered during the 2014–2015 Ebola virus disease outbreak.

The 2015 *National Preparedness Report* discussed several challenges that emerged during the 2014–2015 Ebola virus disease outbreak, which involved four cases confirmed by U.S. laboratories and seven infected individuals medically evacuated to the United States from abroad for treatment. These challenges included training deficiencies for healthcare workers concerning infection control and the appropriate use of personal protective equipment, as well as the need to continue research and development of medical countermeasures. Additional challenges included inter-facility transportation of patients with confirmed or suspected high consequence infectious diseases and waste management. Lessons learned have continued to surface in the aftermath of this outbreak, which have informed preparedness efforts in 2015:

- Regional Ebola and Other Pathogen Treatment Centers:** The outbreak revealed that not every major U.S. hospital could develop and sustain the resources and training necessary to adequately support Ebola identification, biocontainment, and treatment requirements. To address this challenge, HHS worked with state health agencies to assess hospitals' preparedness to diagnose and care for patients with Ebola and designate highly prepared hospitals as Ebola Treatment Centers. As of July 2015, state and local health officials had designated 61 hospitals as state or jurisdiction Ebola Treatment Centers. As a result, more than 80 percent of travelers returning from West Africa now live within 200 miles of an Ebola Treatment Center. Other hospitals can transfer infectious disease patients to these centers when specialized or longer-term care is necessary. Building on this concept, ASPR selected and funded nine state and local health departments and their partner hospitals to serve as regional Ebola and other special pathogen treatment centers (see Figure 10). These centers will have even greater capabilities to manage infectious disease. To ensure their readiness, ASPR awarded each of these nine hospitals a total of approximately \$3.25 million over five years (through 2019).

Regional Ebola and Other Special Pathogen Treatment Centers

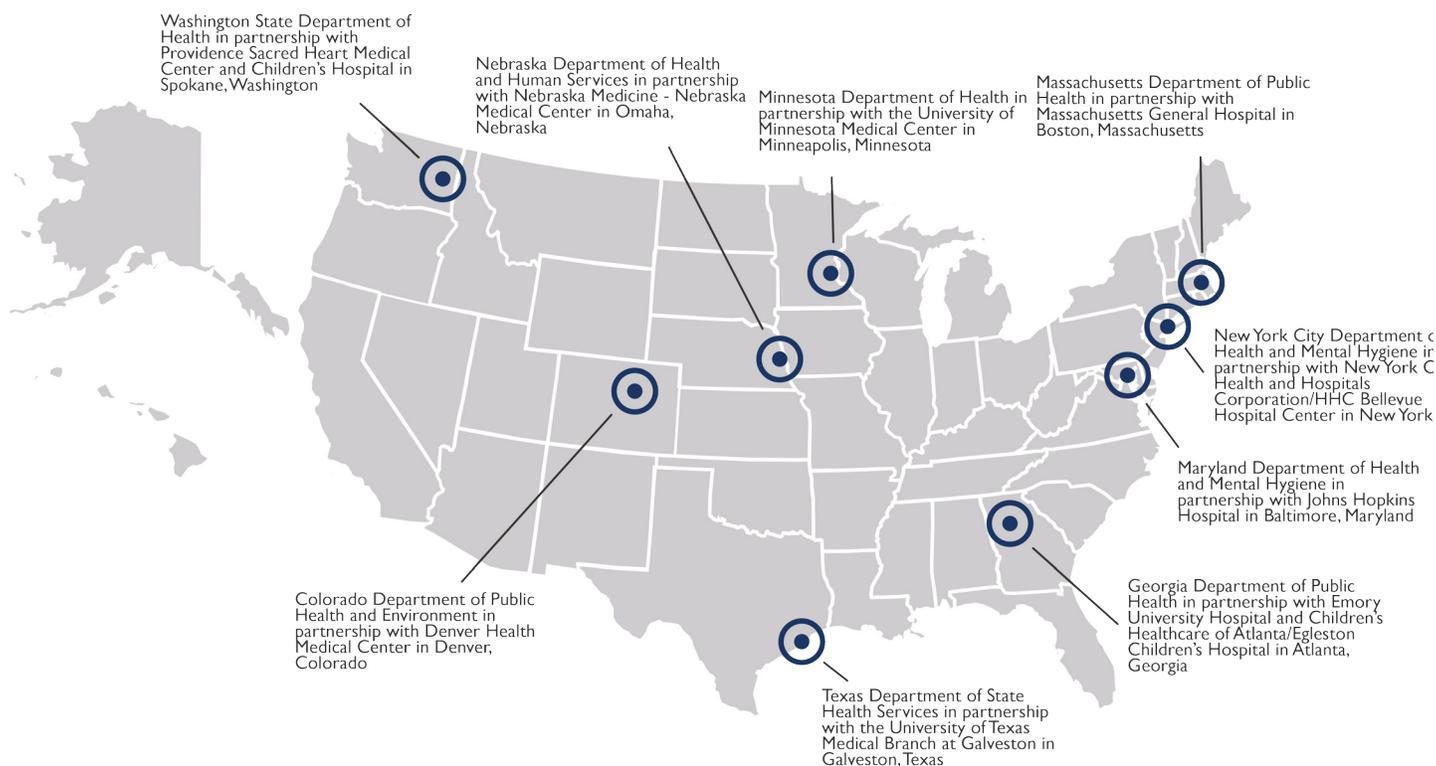


Figure 10: Nine state and local health departments and partner hospitals serve as regional Ebola treatment centers.

- Personal Protective Equipment Training:** To improve healthcare workers' awareness of proper procedures for putting on and removing personal protective equipment, CDC and partners have also provided interactive web-based training for the proper use of personal protective equipment that allows healthcare workers to select the combination of equipment that they would like to see demonstrated in the video. As detailed in Appendix A, the FEMA Center for Domestic Preparedness developed a training course on personal protective measures for healthcare workers, delivering over 160 courses to almost 4,150 students (from October 2014 to December 2015).
- Personal Protective Equipment Availability:** Most hospitals and healthcare organizations had little experience treating Ebola virus disease, and some hospitals lacked adequate supplies of personal protective equipment. Many hospitals began ordering personal protective equipment and some over-ordered product, which led to backorders and extended delivery times. To help address this issue, CDC issued guidance on the amount of personal protective equipment that hospitals needed based on the hospital's role. In addition, CDC received emergency funding to increase quantities of Ebola personal protective equipment in the Strategic National Stockpile. Furthermore, to assist hospitals in purchasing the correct personal protective equipment, the National Institute for Occupational Safety and Health (NIOSH) developed PPE-Info Database, which serves as a comprehensive compendium of Federal regulations and consensus standards for personal protective equipment.
- Medical Countermeasure Development and Clinical Trials:** As discussed in the 2015 *National Preparedness Report*, the Public Health Emergency Medical Countermeasures Enterprise—an ASPR-led interagency collaborative established to address chemical, biological, radiological, and nuclear agents threats and emerging infectious diseases through medical countermeasures—worked closely with medical countermeasure suppliers to accelerate the development and initiate clinical trials of vaccines, therapeutics, and diagnostic tests for Ebola. By 2016, several vaccine and therapeutic candidates for Ebola may be mature enough for inclusion in the Strategic National Stockpile. These candidates could not have advanced as quickly without the pre-outbreak planning and maintenance of manufacturing capabilities that were supported by enterprise partners.
- Waste Management:** Ebola highlighted challenges of managing the waste generated by some infectious diseases and biological agents. For example, DOT classifies Ebola-contaminated medical waste as a Category A infectious substance, which requires stringent processes for transportation. As a result, waste management contractors who handle hospital medical waste initially could not transport the Ebola-contaminated waste. Moreover, many U.S. landfills were unwilling to accept incinerated Ebola-contaminated waste, resulting in logistical and regulatory challenges. To address these issues, the DOT Pipeline and Hazardous Materials Safety Administration developed a process to rapidly issue special permits to allow waste haulers to package or ship hazardous materials in a manner that varies from existing regulations, but maintains an equivalent level of safety. In December 2014, CDC released guidance detailing procedures for effective Ebola waste management and disposal. The Occupational Safety and Health Administration (OSHA), NIOSH, and EPA also released a fact sheet for workers on safe handling, treatment, transport, and disposal of Ebola-contaminated waste. In addition, the challenges encountered domestically with Ebola resulted in the formation of an interagency workgroup focused on waste management for biological agents.



Previous joint efforts by DHS, USDA, EPA, and other Federal agencies have shown that pre-incident waste management plans are critical for communities to effectively respond to and recover from an incident involving infectious diseases, as well as chemical, biological, and radiological agents and foreign animal diseases. To assist communities in such planning, EPA launched a [website](#) that contains information on

different waste-management options, considerations to address during a response, and waste-management activities that can help a community prepare for an incident, as well as detailed guidance for emergency managers and planners on a recommended four-step process for pre-incident waste management planning.

Sustaining and building upon progress that has been made since the 2014 Ebola virus disease response is important for national preparedness—not just for Ebola, but also for responding to a larger, more complex, infectious-disease outbreak.

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PREPAREDNESS CASE STUDY: RESPONDING TO A BIOLOGICAL INCIDENT IN NEW YORK CITY

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In fiscal year 2015, EPA collaborated with the New York City Department of Health and Mental Hygiene to develop operational guidance that provides tactical solutions and strategies for responding to a wide-area biological incident taking place in New York City. The new guidance focuses on issues such as environmental characterization, decontamination, waste management, and responder health and safety. New York City officials plan to incorporate the guidance into several table-top exercises for fiscal year 2016.



Key Finding: The 2015 avian influenza outbreak revealed waste management and biosecurity gaps in the Nation’s ability to respond to animal disease outbreaks.

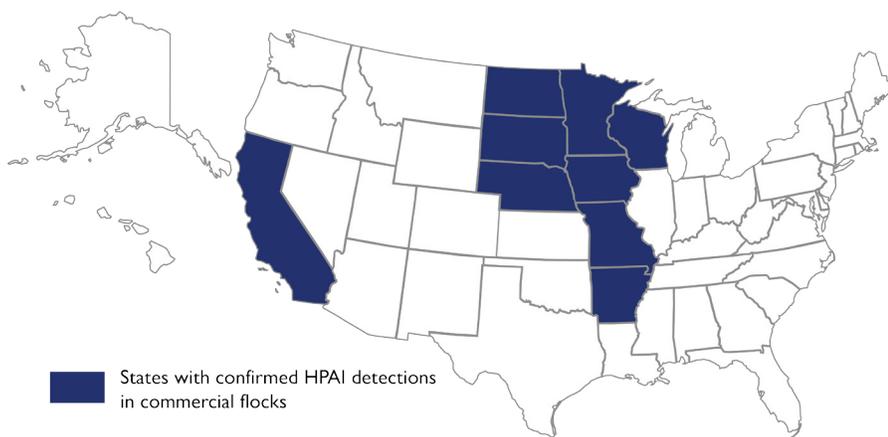


Figure 11: Nine states had confirmed highly pathogenic avian influenza (HPAI) infections in commercial flocks.

The 2015 highly pathogenic avian influenza outbreak was the largest animal health emergency in U.S. history. Between December 2014 and June 2015, highly pathogenic avian influenza was detected in commercial flocks in nine states (see Figure 11). By the outbreak’s conclusion, farmers and commercial poultry producers culled 7.5 million turkeys and 42.1 million chickens, leading to direct economic losses of \$1.6 billion (with broader economic impacts estimated at \$3.3 billion).

With its unprecedented scale, the 2015 outbreak revealed shortcomings in waste management and biosecurity practices, such as the decontamination of workers and equipment:

- **Waste Management:** The number of birds infected during the avian influenza outbreak exceeded states’ capacity to depopulate flocks and dispose of the carcasses. Even with assistance from state and local emergency managers, as well as incident management teams from USDA APHIS, poultry farmers struggled.

Concerns over liability, environmental consequences, and public acceptance further complicated disposal. Following the outbreak, USDA administered a self-assessment survey to states. The results indicated that nearly all states will require depopulation and disposal supplies from USDA APHIS in the event of a future highly pathogenic avian influenza outbreak, and that few states had emergency contracts in place for rapid delivery of supplies and services. Respondents from 27 states also indicated that their state lacked a plan for carcass disposal in the event of catastrophic poultry deaths or depopulation (e.g., disposal of half or all of the state's poultry). Moreover, a majority of states did not have agreements with landfills to dispose of large amounts of avian influenza-contaminated waste. States and territories echoed these concerns in 2015 State Preparedness Report submissions, where they indicated the greatest Environmental Response/Health and Safety capability gaps in hazardous material clean-up (58 percent) and decontamination (55 percent). To help address these challenges, USDA APHIS completed an inventory of federally owned depopulation and disposal equipment to assist with their deployment in future outbreaks.



- Biosecurity Practices:** During the outbreak, equipment sharing between farms and inadequate cleaning and disinfection practices for equipment and workers increased the risk of spreading avian influenza. USDA and private-sector stakeholders have taken several actions to address this. USDA APHIS developed a biosecurity self-assessment checklist—which includes items such as the development of proper decontamination procedures—to help producers develop stronger biosecurity plans. Since many poultry workers lack full English fluency, USDA APHIS also released multilingual educational materials, including fliers illustrating biosecurity best practices for backyard flocks. Furthermore, the National Chicken Council released a document detailing top biosecurity principles to help poultry producers prepare for other outbreaks.

While posing a severe threat to poultry, the three influenza strains involved in the 2015 outbreak posed a minimal risk to human health. No human cases of infection were reported, and the risk of animal-to-human transmission of the viruses was low. However, avian influenza viruses can potentially mutate into new forms that pose human-health risks, some of which CDC has identified as having pandemic potential.

Key Finding: The Nation has made progress in understanding and addressing the needs of children in emergency response planning.

Children, who make up nearly one-quarter of the U.S. population, are particularly vulnerable during disasters. In addition to their greater susceptibility to injury and their dependence on others for their livelihood, decision making, and emotional support, children are likely to develop dehydration, malnutrition, and exhaustion more quickly than adults. Children are also more susceptible to infectious diseases and severe forms of illnesses than older individuals. Furthermore, children have an increased risk of becoming separated from their parents or legal guardians, which could occur during evacuation or sheltering, or because children are under the temporary care of providers that may not be able to communicate with parents or legal guardians.

Researchers continue to explore the specific challenges children face following disasters, such as their increased risk for long-term mental health consequences. FEMA has taken steps to promote this work. In April 2015, FEMA hosted a webinar to increase awareness of emerging research and practices to address the needs of youth survivors. FEMA also released a revised *Youth Preparedness Catalogue* in October 2015 to assist youth-preparedness practitioners with accessing promising educational programs and resources tailored to youth.

The Nation's child care stakeholders have made progress in enhancing emergency preparedness plans for child care facilities. These efforts are particularly important for children 0–5 years old (an age group partially or totally dependent on adults for protection, support, and care). In 2015, 33 states and the District of Columbia required

child care providers to develop written plans for safely moving children to an alternate site, reuniting families after a disaster, and including children with disabilities and access and functional needs in emergency plans. This represents a nearly 162 percent increase from 2010 (see Figure 12). Furthermore, Congress included new requirements

Number of States that Require All Three Child Care Facility Standards from Save the Children

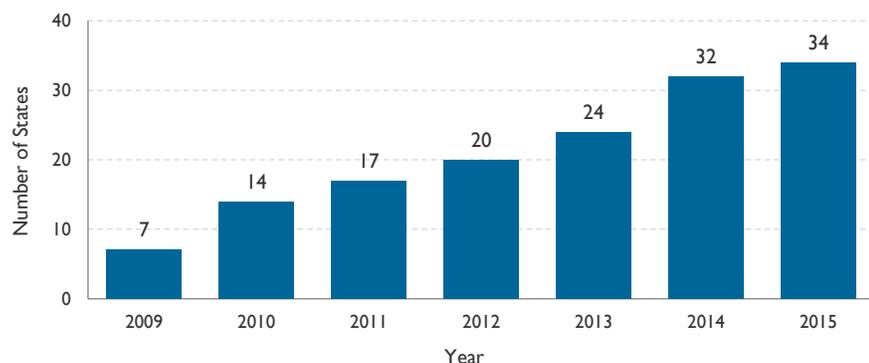


Figure 12: The number of states (including the District of Columbia) that require their child care centers to develop emergency operations plans has increased each year from 2009 to 2015.

for child care programs in the *Child Care and Development Block Grant Reauthorization Act of 2014*. To qualify for the program, which provides child care assistance to low-income families, states must develop a statewide disaster plan for child care, and child care providers receiving funding must take a number of steps, such as adopting procedures for evacuation, relocation, and sheltering-in-place. In 2015, states and child care providers initiated or continued to develop their emergency plans. States must report on the implementation status of their statewide disaster plans to HHS in March 2016.

and released tools and programs to support children's needs in emergency response planning. In January 2015, the U.S. Department of Education released *EOP ASSIST*, a free, web-accessible application to help school administrators and emergency management personnel create or revise emergency operations plans. As of December 2015, 477 individuals, including school administrators and state government officials, have downloaded the tool. The department also released an *EOP ASSIST Interactive Workbook*, a simpler version of *EOP ASSIST* that individuals can use offline, increasing the tool's availability for rural schools and remote areas lacking Internet access. In addition, FEMA's Student Tools for Emergency Planning program teaches fifth graders what to do in emergency situations, including how to develop family emergency communication plans. After collaborating with subject-matter experts in youth disaster preparedness, FEMA issued an update of the program's curriculum in October 2015 based on lessons learned.

Federal agencies have also developed

Key Finding: Federal, state, and local agencies used technology and new methods to enhance the effectiveness of training and exercises for responders and train traditionally under-engaged communities.

Federal agencies are using new training technologies and methods to diversify and improve emergency response preparedness. This enables more dynamic and resource-efficient training and exercise environments, which benefit existing programs. Examples from 2015 include:

- To train public safety personnel in a variety of operational communications positions, the DHS Office of Emergency Communications developed the Response Interoperable Simulation Tool, a computer-based tool that creates an immersive training environment to enhance knowledge retention.
- The FEMA National Exercise Program incorporated geographic information system technology and data products into their exercises, which enabled participants to better understand the exercises' hazards and consequences and to react more closely to how they would in a real-world event.
- The FEMA Center for Domestic Preparedness partnered with the Federal Law Enforcement Training Centers and the National Disaster Medical System to integrate three Federal training programs at a single facility. Five separate training courses culminated in a joint exercise that addressed response actions for a multi-incident, mass casualty scenario involving a domestic terrorism attack, a suicide bomber, and an active shooter event. Integrating these training programs enhanced preparedness learning for 230 Federal, state, local, tribal, and territorial emergency response professionals by giving them access to specialized response actions, pre-incident planning, and operational capabilities.

Training and exercise efforts enhanced preparedness by targeting traditionally under-engaged populations, including tribal communities and youths. For example, university students who are members of tribal nations now have greater access to preparedness training because of collaboration between the National Disaster Preparedness Training Center and the Haskell Indian Nations University, a Bureau of Indian Education school for students from tribal nations.



Similarly, the University of Tennessee, in partnership with the FEMA National Training and Education Division, continued to develop and implement preparedness courses for tribal communities to address their specific needs.

Youth preparedness has also been a growing focus for Federal, state, and territorial governments. With support of the Guam Homeland Security Office of Civil Defense and the Governor’s Serve Guam! Commission, a member of the FEMA Youth Preparedness Council from Guam organized the “Guam Volunteers, Youth Preparedness, and Leadership Summit.” Approximately 650 conference participants from local schools and faith-based organizations, as well as first responders, developed guiding principles for the Guam Youth

Preparedness Program, focused on strengthening youth preparedness and ensuring residents’ safety. In addition, FEMA Corps, in partnership with the Alabama State Service Commission and the U.S. Space & Rocket Center, supported efforts to revise Alabama’s *Be Ready Camp* curriculum, which includes a full-scale mock disaster response for sixth-grade participants. Using a modified training program for Community Emergency Response Teams, students completing the camp are designated Youth Preparedness Delegates; receive commendations from the Governor; and communicate preparedness and safety messages back to their schools, families, and communities. The program received FEMA’s Individual and Community Preparedness Award for “Outstanding Achievement in Youth Preparedness in 2015,” which recognizes individuals and jurisdictions that have made outstanding contributions toward making communities safer, stronger, better prepared, and more resilient.

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PREPAREDNESS CASE STUDY: SOUTHERN CALIFORNIA TRIBAL TEENS LEARN EMERGENCY RESPONSE SKILLS

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After the 2007 wildland fires that devastated tribal communities in southern California, regional tribal leaders formed the Inter Tribal Long Term Recovery Foundation to help communities prepare for future hazards. As part of these efforts, the foundation made the Community Emergency Response Team basic training course available to teens in tribal communities. Specifically adapted to the culture and needs of tribal communities, the course incorporated fire, evacuation, and communication drills, as well as mental health education, to teach teens the skills needed to respond to and recover from an event. In July 2015, the Inter Tribal Long Term Recovery Foundation partnered with the Pala Fire Department to offer this course to 12 representatives from three tribal groups.





Mission Area Overview

RECOVERY

Focused on a timely restoration, strengthening, and revitalization of the infrastructure; housing; a sustainable economy; and the health, social, cultural, historic, and environmental fabric of communities affected by a catastrophic incident

..... Key Finding Highlights



- Federal agencies have developed new, recovery-focused guidance, courses, and training to assist all levels of government in addressing capability shortfalls. (p. 83)
- New research advocates for greater integration of health considerations into pre- and post-disaster recovery planning. (p. 84)
- Public- and private-sector partners are working to improve economic resilience, but economic recovery remains challenging for communities with economies dependent on natural resources. (p. 86, 88)
- The condition of the Nation’s infrastructure remains a challenge, but public- and private-sector partners have established new methods to invest in infrastructure resilience. (p. 89)
- Government agencies, private-sector companies, and community-based organizations across the Nation have taken steps to address the disaster housing needs of underserved populations, but persistent gaps remain in delivering the Housing core capability. (p. 90)

Core Capabilities in Practice

The *National Disaster Recovery Framework* (“Recovery Framework”) provides a flexible structure and process for jurisdictions affected by disasters to recover quickly and effectively. Recognizing that recovery extends beyond the restoration of a community’s physical structures, the Recovery Framework encourages an inclusive recovery process and provides a strategic and community-driven approach to lead, manage, and coordinate recovery efforts while increasing the resilience of communities.

The Recovery Framework identifies eight core capabilities that focus on the repair and restoration of structures and services needed to support the physical, emotional, and financial well-being of disaster-affected community members. Communities use **Operational Coordination** to help implement recovery capabilities and ensure that integrated leadership at multiple levels of government builds successful coalitions. Key stakeholders provide regular input into pre- and post-disaster **Planning** processes to identify recovery objectives and how to best achieve those objectives at the community level. Community leaders also communicate the actions being taken to support recovery efforts and explain what assistance is available to residents and businesses through the **Public Information and Warning** core capability.

Re-establishing the functions and facilities necessary to provide **Health and Social Services**—such as hospital care, child care, counseling, and other services—helps preserve the physical and mental health of disaster

..... CORE CAPABILITIES IN THE RECOVERY MISSION AREA

- Economic Recovery
- Health and Social Services
- Housing
- Infrastructure Systems
- Natural and Cultural Resources
- Planning
- Public Information and Warning
- Operational Coordination

survivors. Communities also lead their own **Economic Recovery** to sustain and rebuild businesses and employment, restoring financial viability to disaster-affected jurisdictions. The recovery process can also include local experts coordinating with the community to preserve, protect, and restore **Natural and Cultural Resources**, including publicly and privately owned cultural institutions and historic properties. Public and private owners and operators of **Infrastructure Systems** must also restore and sustain those essential community services. This, in turn, allows the community to implement temporary and permanent **Housing** solutions for residents displaced by disasters.

The following efforts from 2015 highlight how communities implemented the Recovery Framework's core capabilities to achieve a successful and timely recovery:

Planning and Economic Recovery

After one of the deadliest tornadoes in Arkansas's history struck 12 counties in April 2014—resulting in 91 injuries and 16 fatalities—state and local leaders used Recovery core capabilities and critical tasks to plan for their long-term recovery. The tornado destroyed over 70 percent of local businesses in the town of Vilonia, and damaged or destroyed 30 percent of businesses in neighboring Mayflower. Following the storm, a team of Federal subject-matter experts conducted an assessment to identify Federal recovery programs available to support the affected areas and facilitate coordination between the local communities and state and Federal partners. The Economic Recovery Support Function—led by the DOC Economic Development Administration (EDA)—facilitated bi-weekly coordination meetings with local, state, and Federal partners to develop and implement a recovery strategy. These coordination meetings provided a critical platform for community members to connect and explore collaborative opportunities to support recovery. For example, the University of Arkansas developed new urban designs for Mayflower and Vilonia based on the communities' visions for rebuilding. Moreover, the University of Central Arkansas provided training and analytical support to help the towns in their economic recovery planning. In addition, EDA grant funding supported the hiring of a dedicated, full-time Local Disaster Recovery Manager—a position specifically envisioned in the Recovery Framework. This manager and a small support team were integral to coordinating a range of long-term recovery planning activities for Vilonia and Mayflower throughout 2015, ensuring local priorities were at the forefront by reporting directly to the mayor of each town.

Natural and Cultural Resources

In 2015, the Foundation of the American Institute for Conservation of Historic and Artistic Works, with funding from the Institute of Museum and Library Services, launched the State Heritage Emergency Partnership website, an interactive platform that helps state cultural agencies collaborate with their state emergency management agencies to protect cultural and historical resources. The Foundation also added pre-disaster recovery planning resources to the *Connecting to Collections Online Community*—an online resource for smaller cultural institutions—including a webinar on effective recovery of collections after disasters.

Housing, and Health and Social Services

The Okanogan County (Washington) Long-Term Recovery Group—formed in 2014 to provide recovery services to wildland fire-affected communities in the county—expanded its efforts in 2015. The group has raised funds for and assisted the affected area's vulnerable residents, including those whose primary residences were under- or uninsured, in paying for and rebuilding their homes. In November 2015, the group applied funding it received from Washington nonprofits to employ two full-time disaster case managers through October 2016. Similarly, after the May 2015 flooding in Houston, Texas, damaged more than 12,000 homes, over 30 nonprofit, faith-based, and government organizations formed the Greater Houston Storm Recovery Network to focus on long-term recovery needs. The network has provided case management, supplementary finances, spiritual counseling, and volunteer labor to communities affected by floods in May and October 2015.

Infrastructure Systems and Operational Coordination

The South Carolina Emergency Management Division, Duke Energy, FEMA, the Nuclear Regulatory Commission, and DOE co-led Southern Exposure 2015, which consisted of a two-day, full-scale exercise followed by three separate tabletop exercises focused on housing and economic recovery. During Southern Exposure 2015, participants used current national policies and procedures to test and analyze the Nation's ability to respond to and recover from a catastrophic event at a U.S. nuclear power plant. Approximately 2,000 individuals from across the entire community, including officials from all levels of government and members of the private sector, participated.



THEN and Now

Disaster Assistance to Recovery Core Capabilities

From fiscal year 2006 to fiscal year 2010, less than one percent of DHS non-disaster preparedness assistance supported Recovery core capabilities. In fiscal year 2014 (the latest year for which data were available), this number remained low, totaling roughly one percent of total non-disaster preparedness grants.

Behavioral Health in Recovery

Since 2012, the Federal Government has increasingly incorporated behavioral health considerations into response and recovery efforts through implementation of the *HHS Disaster Behavioral Health Concept of Operations*, and the deployment of HHS mental health teams and new psychological first-aid training for first responders.

American Public Power Association

Since 2012, the American Public Power Association has expanded its mutual aid program, including the establishment and growth of a Mutual Aid Working Group for public power utilities to share best practices related to disaster response, recovery, and mitigation.

BY THE NUMBERS

11,500 U.S. SMALL BUSINESS ADMINISTRATION (SBA) DISASTER ASSISTANCE LOANS

In fiscal year 2015, SBA provided 11,500 Disaster Assistance loans totaling \$371.7 million to help businesses, homeowners, and renters repair and replace physical losses, and to assist businesses with post-disaster operating expenses.

13 STATES

In February 2015, USDA invested \$84 million through its Emergency Watershed Protection Program to fund more than 150 recovery projects in 13 states that had been affected by floods, fires, windstorms, or other natural disasters.

\$5.4 BILLION

As of May 2015, Federal agencies have awarded \$5.4 billion to Mississippi to repair or restructure approximately 40,000 housing units, restore more than 200 public facilities, and create almost 6,000 new jobs.

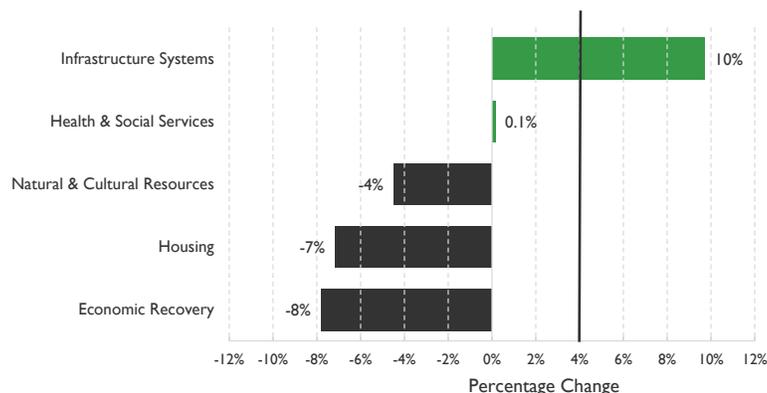


PREPAREDNESS TRENDS AND FIGURES

Mixed Trends in Exercising Recovery Capabilities

Over the past three years, the FEMA National Exercise Program has supported an increasing number of exercises focused on Recovery core capabilities—from nine exercises in 2013 to 23 in 2015. Despite this increase, State Preparedness Report submissions indicate mixed progress in exercise ratings for Recovery core capabilities. Excluding Planning, Public Information and Warning, and Operational Coordination (which are common to all mission areas), only one of the five remaining Recovery core capabilities demonstrated a positive increase in proficiency ratings from 2012 to 2015. Specifically, the rating increase in exercise proficiency for Infrastructure Systems (10 percent) was more than two times larger than the average across all core capabilities (four percent). In contrast, Natural and Cultural Resources, Housing, and Economic Recovery all experienced steady decreases, and Health and Social Services experienced minimal change in exercise ratings from 2012 to 2015.

Change in the Percent of States and Territories Rating Themselves as Proficient in Exercises, 2012–2015



Vertical line (|) indicates the average percentage change of proficient ratings across all core capabilities

PREPAREDNESS SNAPSHOTS



FAITH-BASED ORGANIZATIONS

Episcopal Relief and Development, a national faith-based volunteer organization supporting disaster response and recovery, launched a nationwide asset-mapping platform in 2015 that volunteers can use during disasters to coordinate and identify available relief and recovery resources. This platform will help assess a disaster's impact and coordinate the organization's active assets in affected areas.

UNIVERSITY OF OKLAHOMA

In 2015, the University of Oklahoma established the Resilience Development Institute to equip leaders and professionals with the latest tools for and knowledge of resilience, risk reduction, and disaster recovery. The training consists of three, one week-long sessions that include presentations, interactive exercises, and case studies addressing pre- and post-disaster recovery planning.



HHS, HEALTH RESEARCHERS, AND THE CENTERS FOR MEDICARE AND MEDICAID SERVICES

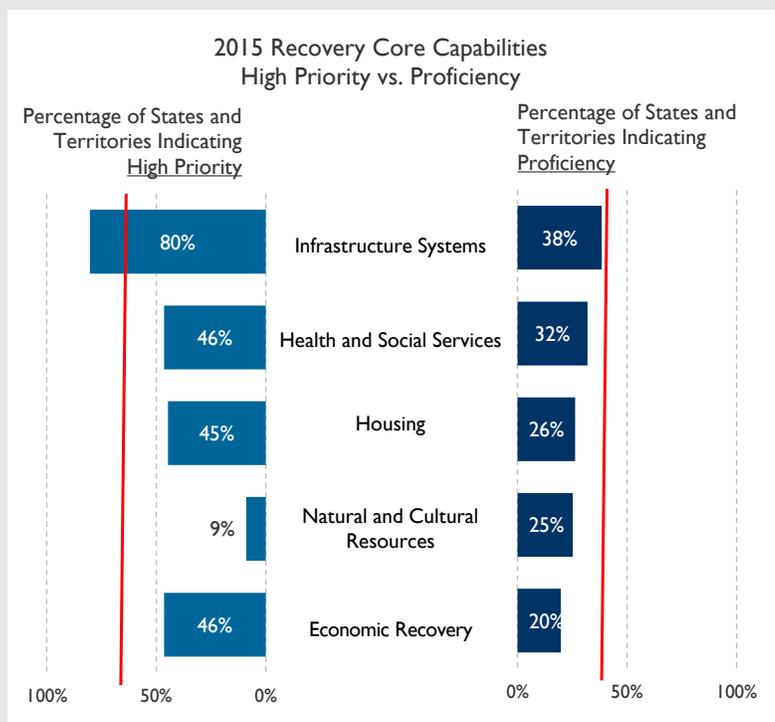
In 2015, researchers concluded 31 research projects funded by HHS to support post-Hurricane Sandy recovery efforts. These projects generated best practices and tools to enhance future recovery efforts, including insights into the provision of mental health services and tools to enhance coordination between local health departments and nongovernmental organizations. In addition, ASPR and the Centers for Medicare and Medicaid Services published results of a research study that followed treatment patterns and outcomes of 13,000 New York City and New Jersey dialysis-dependent patients around the time of Hurricane Sandy. The study identified mitigation measures that both protected patients' health (e.g., reduced deaths) and minimized stress on the healthcare system before, during, and after the hurricane.

STATE PERSPECTIVES ON PREPAREDNESS

2015 State Preparedness Report Results

- In 2015, states and territories assessed themselves as proficient in only 28 percent of Recovery core capability responses, which was the lowest among all mission areas for the fourth consecutive year.
- Four of the five Recovery-specific core capabilities (all but Infrastructure Systems) ranked among the bottom 10 in priority among all core capabilities.
- States and territories identified Housing and Economic Recovery as two of the top-five core capabilities that would need Federal support to fill remaining gaps.

Notes: Vertical red lines (|) indicate the average rating for all core capabilities. The chart and statements do not include contributions from the three cross-cutting core capabilities—Planning, Operational Coordination, and Public Information and Warning.



KEY FINDINGS

Key Finding: To address persistent gaps in the recovery capabilities of states and territories, Federal agencies have developed new guidance, courses, and trainings to assist all levels of government.

Since 2012, states and territories have consistently reported lower levels of proficiency in Recovery core capabilities than in core capabilities of other mission areas. Recognizing these gaps, Federal agencies released new planning guidance and added several recovery-focused trainings and workshops for state, tribal, local, and private-sector partners. In February 2015, FEMA released *Effective Coordination of Recovery Resources for State, Tribal, Territorial and Local Incidents* to assist all levels of government in managing the post-disaster recovery process. This guide identifies critical tasks related to leadership development, needs assessment, and resource coordination that state, tribal, and local leaders can use to support effective recovery efforts following disasters. DHS, the Advisory Council on Historic Preservation, the Council on Environmental Quality, and other Federal agencies also published a guide to help state, tribal, and local applicants for Federal aid understand the environmental and historic preservation review requirements for disaster recovery projects. The publication assists disaster recovery stakeholders at all levels of government in coordinating with Federal agencies to verify that proposed recovery projects will have minimal adverse impacts on the environment.

In 2014, self-assessments by states and territories showed that proficiency in recovery training was 10 percentage points lower than the average of all core capabilities. To address these needs, the Federal Government introduced 11 recovery training courses in 2015, nearly doubling the number of courses available to Federal, state, tribal, and local partners. These courses address topics such as long-term recovery planning and the role of local governments in recovery efforts. In addition, the FEMA Emergency Management Institute delivered 312 recovery-focused courses (online and in-class) in 2015—an increase of nearly three times the number delivered in 2013.

In 2015, Federal partners also hosted several three-day National Disaster Recovery Framework Leadership Workshops to familiarize recovery stakeholders with Federal recovery programs, planning, and operational best practices to enable more effective pre- and post-disaster collaboration among Federal, state, tribal, and local partners. Participation in these workshops increased by 62 percent between 2014 and January 2016. HHS hosted a similar disaster recovery workshop for public health officials in 2015 that brought together Federal and non-Federal partners to discuss issues, challenges, and plans for future improvements.



The Federal Government also took important steps in 2015 to standardize training for Federal personnel who support recovery operations in the field. USACE finalized an online recovery-operations curriculum that it used to train and certify 27 infrastructure systems field coordinators since the training began—including at least two in every FEMA Region. These coordinators serve as Federal liaisons to state, tribal, and local governments for post-disaster infrastructure recovery efforts. DOI developed a similar online program, as well as a concept of operations and standard operating procedures, to prepare its field personnel to support the Natural and Cultural Resources core capability. FEMA collaborated with other Federal agencies to develop new training for advisors who coordinate Unified Federal Reviews—a process established in 2014 to expedite the

review of legally required environmental- and historic-preservation impact analyses of proposed recovery projects. These advisors activated for six presidentially declared disasters in 2015 to assist government and nonprofit partners in the review and implementation of disaster recovery projects. The Health and Social Services Recovery Support Function also finalized a concept of operations for all of its Federal interagency supporting partners in 2015. These efforts demonstrate progress in familiarizing Federal personnel with the Recovery Framework, a challenge identified in the 2015 *National Preparedness Report*.

Economic Recovery Disaster Recovery Housing
 individual community planning and capacity building sustainability
 Health and Social Services Natural and Cultural Resource
 capability Infrastructure Systems Operational Coordination
 Unity of Effort federal support inclusiveness resilience Critical

.....

PREPAREDNESS CASE STUDY:
 ASSESSING FEDERAL READINESS TO SUPPORT RECOVERY

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In 2015, the Federal Government completed an initial assessment of Federal recovery support available to states, tribes, and local communities. The assessment addresses previously established interagency priorities to better define Federal capacity, strengthen information sharing and communications across agencies, and improve readiness to support recovery efforts in local communities. The assessment process began with identifying and establishing Federal outcome targets for recovery. Next, each Federal agency explicitly described the support—including technical expertise, personnel, equipment, and other resources—that it could offer to a recovery mission. A major outcome of the assessment has been an improved understanding of Federal roles and resources available to support disaster recovery operations for state, tribal, and local governments. Additional outcomes include the establishment of baseline data on collective Federal capabilities to support recovery efforts, a new methodology for measuring these capabilities, and a regular interagency forum to annually evaluate Federal readiness to meet the long-term recovery needs of disaster survivors and community partners. The assessment will be an ongoing initiative and will allow Federal agencies to monitor progress in developing their capabilities to support recovery in local communities.

Key Finding: New research and recent Federal initiatives encourage decision-makers to incorporate health considerations into all aspects of disaster recovery planning.

Research conducted by public health stakeholders indicates a need to work more collaboratively to meet community and individual health needs in a post-disaster environment. In their annual preparedness self-assessments, states and territories identified “determining health and social needs” as their largest gap area in the Health and Social Services core capability, selecting the gap for 59 percent of responses. Furthermore, the Institute of Medicine (IOM), with support from HHS, HUD, other Federal agencies, and The Robert Wood Johnson Foundation, released a report in 2015 that offers recommendations and guidance for communities to more proactively incorporate health considerations into pre- and post-disaster decision-making for recovery efforts. Its recommendations include establishing mechanisms to ensure that non-health sector professionals—including elected officials, emergency managers, disaster recovery managers, and urban planners—consider the health implications of all decisions made in the disaster recovery process.

One suggested mechanism encourages communities to review all planned rebuilding actions with local health departments to ensure that they meet the community’s immediate and long-term health needs. Similarly, based on the premise that a community’s health and resilience are dependent on its buildings and physical infrastructure, NIST analyzed ways in which stakeholders can prioritize post-disaster rebuilding activities to maximize community health and resilience. In particular, NIST recommends identifying and assessing pre-existing gaps in a community’s social systems—including healthcare—to guide pre-disaster recovery planning for post-disaster rebuilding efforts. Both the IOM report and NIST research provide new tools for government and other partners to assess and assist with the health and social service needs of disaster survivors, indicating further progress in this area since the 2014 *National Preparedness Report*.



The IOM report highlights Los Angeles County as an example of a community that has taken steps to integrate its health sector into pre-disaster recovery planning by engaging health officials in the development of community needs assessments and resilience toolkits. Table 3 describes other recent and ongoing Federal initiatives that have incorporated elements of this holistic approach to recovery planning.

Table 3: Federal agencies have collaborated with other partners to provide new tools and improve existing ones for health-related recovery planning.

AGENCY AND PARTNERS	PRODUCT(S) OR INITIATIVE	DESCRIPTION
EPA, FEMA, HUD, NIH, CDC, and OSHA	Health Guides for Disaster Recovery Workers and for Homeowners and Renters	Provides overviews of hazards and recommended controls for asbestos, lead, mold and radon
NIST	Report on Indoor Environmental Issues in Disaster Resilience	Defines role of indoor environmental quality in the context of community resilience to inform disaster recovery planning
HUD	Rebuild Healthy Homes Initiative	Offers guidance to rebuild infrastructure and housing in a way that enhances health through various media formats, including: the Healthy Homes Disaster Recovery website; a guidance document for homeowners and recovery workers; videos; and a mobile application

Key Finding: The Federal Government is expanding health information-sharing systems to enhance pre-disaster recovery planning and post-disaster research capabilities for health and social services.

In 2015, Federal agencies provided new, health-focused online repositories and tools to facilitate pre-disaster planning and post-disaster recovery and research efforts. In September, HHS launched its Technical Resources, Assistance Center, and Information Exchange (“TRACIE”), a new healthcare emergency preparedness information exchange that includes a searchable database of resources related to pre- and post-disaster health issues. The resources span 65 different topic areas, including recovery, continuity of operations, and disaster behavioral health services. TRACIE offers access to technical assistance specialists who can provide guidance to healthcare officials, emergency managers, and other stakeholders on identifying subject-matter experts for consultation; finding resources to support planning, training, or exercises related to disaster medicine; healthcare system preparedness; and public health preparedness. As of March 2016, HHS received over 300 requests for technical assistance on a variety

of topics through this system, from all levels of government and other partners, such as health coalitions and healthcare facilities. HHS delivers this assistance through a publicly accessible webpage, a toll-free phone number, an email address, and a password-protected discussion board that supports near-real-time chats and peer-to-peer file sharing.



Additionally, the National Institute of Environmental Health Sciences and the U.S. National Library of Medicine launched the Disaster Research Response website in early 2015 to support federally sponsored research centers, academic partners, and other grantees involved in disaster recovery and emergency preparedness efforts. The website hosts over 165 data collection tools, research protocols, training materials, and networking forums on environmental health to improve and accelerate

research efforts integral to advancing and developing best practices in health recovery. This includes research into the health and safety of recovery workers, responses to pandemics, and the effects of disasters on mental health. These tools will benefit health researchers involved in current recovery efforts—such as research into the long-term health effects of the Deepwater Horizon oil spill—as well as pre-disaster recovery planning efforts.



HHS Response and Recovery Resources Compendium

In July 2015, HHS launched the Response and Recovery Resources Compendium, an online collection of Federal resources that communities can access to address health and human service needs during disaster response and recovery operations. The collection provides overviews, real-world case studies, and access instructions for numerous response- and recovery-related resources, including the following:

RESPONSE

- Federal liaisons who provide health expertise and deployable teams that provide medical care
- A web-based tool integrating real-time data to support decision making
- The first national hotline dedicated to providing year-round disaster crisis counseling

RECOVERY

- Descriptions of HHS post-disaster case management services for children and youth available to states upon request
- Department-wide assets that support Health and Social Services recovery, including deployable subject-matter experts
- A Disaster Toolkit to familiarize recovery workers with health and traumatic stress issues

Key Finding: Challenges hindering post-disaster economic recovery include inadequate communication with the business community and a lack of familiarity with Federal assistance programs. Public- and private-sector partners have promoted economic resilience and business continuity planning to strengthen recovery efforts.

Federal agencies and private-sector partners have identified common challenges that impede economic recovery efforts. According to a March 2015 International Economic Development Council guide (funded in part by EDA), many communities do not promote regular communication between the business community and emergency management officials. Consequently, when disasters occur, local officials and the business sector are less prepared to share information, which can hinder business recovery. Local economic recovery stakeholders are often unfamiliar with the range of Federal assistance programs available to them following disasters, which can also impede economic recovery. Since 2012, states and territories have reported an overall decrease in proficiency in the Economic Recovery core capability of seven percentage points, dropping from 27 percent in 2012 to 20 percent in 2015 State Preparedness Report submissions.

To address these challenges, EDA modified its guidelines for EDA-funded regional Comprehensive Economic Development Strategies in 2015 to prioritize investments in economic resilience. These strategies bring together

public and private stakeholders to develop an economic roadmap for diversifying and strengthening regional economies. In the context of economic development, EDA finds that economic resilience is inclusive of three primary attributes: the ability to recover quickly from a shock, the ability to withstand a shock, and the ability to avoid the shock altogether. As the only Federal agency focused exclusively on economic development, EDA provides different types of grants to local communities to stimulate private-sector growth (see Figure 13). The updated guidelines for Comprehensive Economic Development Strategies recommend that applicants clearly define key stakeholders and their roles and responsibilities during and after emergencies; develop methods to monitor business community needs before and after an incident; and establish coordination mechanisms and leadership succession plans for near- and long-term recovery. Recognizing that jurisdictions may need assistance in incorporating resilience efforts into their longer-term economic development plans, the National Association of Development Organizations established an online library of best practices for integrating resilience and recovery planning. One of the key resources in the library is the updated [Leadership in a Time of Crisis](#) toolkit, released in March 2015, which provides business and community leaders with tips and strategies on economic recovery, including information on convening stakeholders, preserving jobs, and connecting with Federal resources for response and recovery.

EDA’s Disaster Assistance Grants in 2015

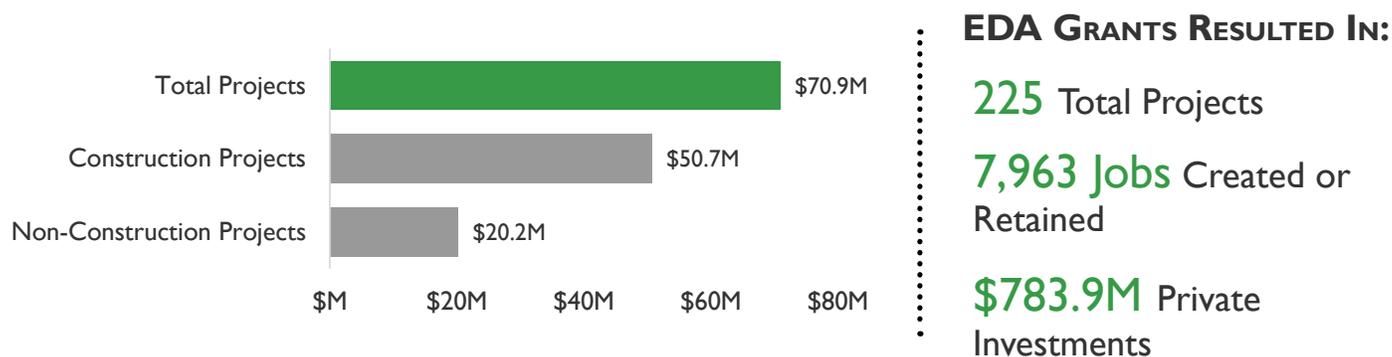


Figure 13: EDA Disaster Assistance Grants totaled more than \$70.9 million in 2015.

SBA continues to emphasize pre-disaster recovery planning through activities such as a monthly webinar series it co-sponsors with FEMA and a private company to help businesses prepare for and plan to recover from disasters. SBA’s resource partners provide a variety of counseling services aimed at countering disaster impacts. In recent years, these partners have provided increasing levels of pre- and post-disaster business continuity training to small businesses. After disasters, SBA’s partners expand their efforts to include assistance to businesses applying for SBA and other disaster assistance, as well as counseling businesses on adapting their business plans to changes in the economic environment resulting from the disaster. SBA has modified its procedures to ensure that businesses declined for post-disaster loans are referred to resource partners for additional counseling services. In fiscal years 2012–2015, SBA referred over 6,000 such businesses to SBA resource partners, including Small Business Development Centers, Women’s Business Centers, and a nonprofit association of volunteer business counselors.

The Federal Government and industry groups also sponsored new nationwide forums and workshops in 2015 to foster partnerships and exchange recovery resources among emergency managers, developers, and business owners. EDA and the National Association of Development Organizations convened these stakeholders in a regional conference of southeastern states to establish new communication channels and share best practices and lessons learned on business continuity planning and economic recovery.



Key Finding: Damage to the ecosystems of communities with local economies dependent on natural resources can amplify disaster impacts and prolong recovery.

Disasters can create challenges for communities whose economies are dependent on environmental and natural resources. In their 2015 self-assessments, states and territories indicated their greatest Natural and Cultural Resources gap is “environmental preservation and restoration” (74 percent of all responses). For some tribes in 2015, disaster-related damages to local ecosystems created both short- and long-term economic impacts. For example, the 2015 wildland fires in Washington damaged timber resources and rangelands important to the economic vitality of the Colville Indians. The tribe estimated that 20 percent of the Colville Indian Reservation burned in the fires, including 800 million board feet of marketable timber, worth over 10 years of normal timber production. Timber revenues make up nearly a quarter of the tribal government’s annual budget, and the industry employs a sizable portion of the tribe’s workforce. The fire also damaged land that the tribe leases to local ranchers, which tribal officials estimate will take at least three years to recover.

Furthermore, ecosystem damage resulting from disasters can impact coastal communities dependent on the fishing industry for up to one year after an incident. An August 2015 NOAA study found that damage from Hurricane Sandy disrupted the recreational and commercial fishing industries in New York and New Jersey. In the 12-month period following the storm, the percentage of revenue loss to fishing and fishing-related businesses was 26 percent in New York and 31 percent in New Jersey. Uninsured losses to fishing and fishing-related businesses were estimated at \$200 million in New York and \$250 million in New Jersey.

Damage to the local ecosystem of communities reliant on nature-based tourism is another example of how impacts to natural resources have a cascading effect on the local economy. The April 2010 Deepwater Horizon oil spill, which leaked approximately five million barrels of oil over a three-month period, severely affected the Gulf Coast tourism industry. According to statistics from the Gulf Coast Claims Facility, financial losses spanned from Texas to the southern tip of Florida. Industries most affected included hotels, resorts, restaurants, and bars. According to research funded by the DOI Bureau of Ocean Energy Management, public misperceptions about the oil spill contributed to additional recovery challenges for tourism and industry officials. The spill’s impact on tourism in the Gulf Coast lasted for several years, with an estimated loss of approximately \$22.7 billion in tourism through 2013.

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**PREPAREDNESS CASE STUDY:
EMERGING RESEARCH IN CLIMATE
CHANGE AND HEALTH EFFECTS**

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The damaging effects from slow onset events such as climate change and drought can be challenging to identify and resolve. Emerging research indicates that climate change may adversely affect the mental health of indigenous communities in the Circumpolar North—including the 229 federally recognized tribes of Alaska. As a result of climate-driven changes such as sea level rise and ice thawing, Alaskan tribes are experiencing reduced access to traditional foods, decreased water quality, increased exposure to health hazards, and other quality-of-life disruptions. In some cases, tribal villages are in the process of relocating from their historical homelands due to land erosion and flooding. These changes could create new or amplify existing stress within Native Alaskan communities, whose culture and identity are deeply tied to their natural environment. Insufficient research exists on how individuals and communities experience and adapt to environmental changes. Consequently, a growing number of health professionals and scientists are advocating for more research into the social and behavioral consequences of climate change.

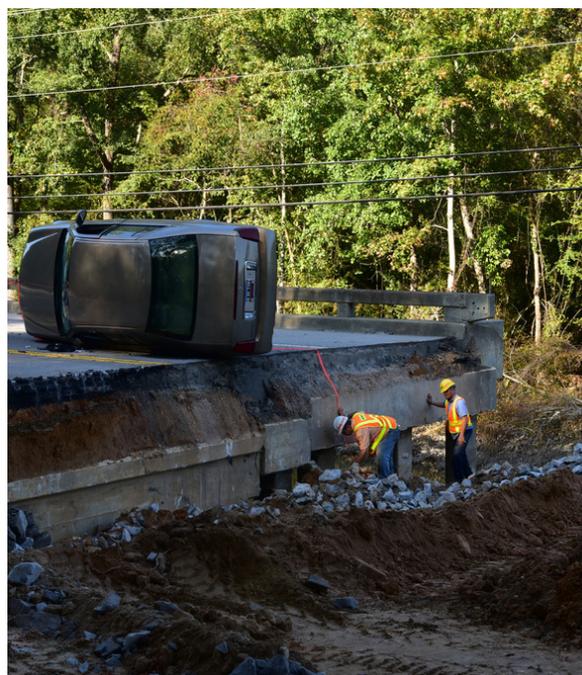


Key Finding: The condition and age of the Nation’s infrastructure systems remain high-priority issues, and public- and private-sector partners are making incremental improvements to the resiliency of transportation and other infrastructure systems through collaborative investments.

Critical infrastructure resilience among lifeline sectors that provide essential functions, such as transportation and drinking-water systems, continues to be a challenge nationally.

- Thirty-two percent of the Nation’s major roads are in poor or mediocre condition.
- While the number of deficient bridges has decreased since 2005, about a quarter of the Nation’s bridges remain deficient.
- The Nation’s water pipes are rapidly aging, leaking more than 46 billion gallons of water per day—enough to supply the country’s 10 largest cities for almost two weeks. The American Water Works Association estimated that the Nation needs to invest more than \$1 trillion over the next 25 years to maintain current levels of water service.

A finding in the 2013 *National Preparedness Report* highlighted that the management of infrastructure systems can require integrated efforts from both the public and private sectors. In 2015, new initiatives enhanced the resilience of the Nation’s transportation and drinking-water systems. Most notably, Congress passed the *Fixing America’s Surface Transportation Act*, or “FAST Act,” which committed \$305 billion through 2020 for state and local governments to upgrade surface transportation infrastructure, including roads, bridges, transit systems, and passenger rail networks. The FAST Act is the first law enacted in more than 10 years that provides long-term, guaranteed Federal funding to the surface transportation sector.



Several provisions in the law amend planning and performance-assessment policies to incorporate resilience into infrastructure projects and promote greater private investment in infrastructure development.

Other innovative mechanisms to support critical infrastructure investment in 2015 include:

- EPA established the Water and Infrastructure Resiliency Finance Center, which works with state and local governments and private-sector partners to use Federal grants to attract more private capital into critical water infrastructure projects.
- DOT formally launched the Build America Transportation Investment Center, a coordination hub for state and local governments and private-sector sponsors to better integrate Federal expertise and programs into infrastructure projects designed to make transportation systems more resilient.
- USACE developed a public-private partnerships model that can be used to implement flood risk-management projects. This model offers alternative funding options that involve the private sector to help reduce the backlog of authorized Federal water infrastructure projects.
- USDA launched the Rural Opportunity Investment Initiative to help communities leverage private-sector financing opportunities against more than \$30 billion in existing USDA resources to support vital rural infrastructure projects, including water and wastewater systems.

Key Finding: The Nation has made progress in meeting the disaster housing needs of low-income families and individuals with access and functional needs, but persistent housing challenges remain at all levels of government.

Recent public-private collaborations have focused on improving disaster housing services for low-income families and individuals with access and functional needs. Informed by lessons learned from Hurricane Sandy, Enterprise Green Communities—with funding support from HUD and private and nongovernmental organizations—released the *Ready to Respond: Disaster Staffing Toolkit* in August 2015. The toolkit helps affordable-housing organizations develop emergency plans to maintain key business operations, protect buildings, and actively engage residents during and following disasters. The toolkit also introduces housing organizations to the Incident Command System—the framework used by Federal, state, and local first-responder agencies to coordinate emergency response and recovery operations. Providing these tools to affordable-housing managers will enable them to better protect their buildings and meet residents’ needs in future disasters, as well as to coordinate more effectively with first responders.

FEMA has capitalized on its collaboration with the private-sector housing industry, as identified in the 2013 *National Preparedness Report*, by increasing the number of accessible transportable temporary housing units it owns and distributes to disaster survivors who require accessible temporary housing accommodations. In September 2014, FEMA required that all FEMA transportable temporary homes include standard accessibility features, such as grab bars in bathrooms, smoke detectors that provide both an audible and visual warning, and lever door handles. Units that are fully compliant with current Federal accessibility standards, including wheelchair ramps, lower cabinets, and increased bathroom sizes, account for roughly 15 percent of FEMA’s inventory of temporary transportable housing. In 2015, survivors with access and functional needs in multiple states affected by wildland fires received these units.

Despite this progress, other long-standing challenges with disaster housing remain, including a lack of pre-disaster planning and interagency coordination across the different short- and long-term phases of housing support. Although 80 percent of states reported in 2015 that their emergency management agencies are coordinating with housing agency counterparts to develop recovery plans, states and territories have continued to report low levels of proficiency in the Housing core capability since 2012. In 2015, states and territories rated Housing as their fourth-lowest-rated capability, with only 26 percent of responses indicating proficiency (i.e., a score of 4 or 5 on a 5-point scale). Since 2012, states and territories have reported a decrease in capability proficiency of two percentage points for Housing. According to a recent analysis of after-action reports from 12 exercises and six real-world incidents, emergency managers continue to cite challenges in the process of transitioning disaster survivors from temporary sheltering to permanent housing. In 2015, states and territories also identified “addressing housing shortages” and “housing assessments” in the top-15 most frequently cited gaps among all core capabilities. Finally, no comprehensive training exists to familiarize Federal personnel, state agencies, or disaster survivors on the range of available disaster housing programs and applicable laws regarding the move from temporary sheltering to permanent housing.





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PREPAREDNESS CASE STUDY: DISASTER HOUSING SUPPORT TO THE OGLALA SIOUX TRIBE

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In May 2015, extensive damage from severe storms, winds, and flooding prompted the Oglala Sioux Tribe on the Pine Ridge Reservation in South Dakota to request and receive a Presidential Disaster Declaration. More than 450 dwellings on the reservation sustained damages that affected their habitability and required repair or replacement. A shortage of safe, secure, and habitable housing prior to the disaster complicated the recovery for the community. In limited circumstances when no available alternative housing resources exist and temporary housing assistance provided by FEMA is unavailable, infeasible, or not cost-effective, the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* authorizes FEMA to implement a permanent housing construction mission to assist the affected community. The Pine Ridge disaster recovery effort marks the first implementation of a FEMA permanent housing construction mission in the continental United States.

FEMA provided intensive individual case management to tailor solutions to meet the needs of each affected owner/occupant. More than 200 owners will receive a manufactured housing unit that will be permanently installed on their property; more than 100 will receive direct repairs to bring their residence up to Federal habitability standards; and the remainder will receive financial assistance to conduct repairs. Housing replacement and repair efforts also focused on meeting accessibility standards for individuals with access and functional needs.

While repair and replacement of damaged homes are key for a

community's recovery, the Oglala Sioux Tribe requires broader, longer-term strategies to address persistent housing challenges. To support this, local and Federal entities established a long-term recovery coordination team and housing task force to identify and implement strategies to meet the community's larger critical housing needs. As part of this effort, HUD deployed a field coordinator and housing team to provide technical assistance and subject-matter expertise to assist tribal leadership in applying for housing grants, directing the housing task force, and developing long-term housing solutions.

While reestablishing housing post-disaster is a challenge across the Nation, tribal communities can face additional limitations with longer-term housing recovery. For example, many tribes depend on HUD programs to meet their typical housing needs because private banks and other lenders are reluctant to underwrite construction on tribal lands. In part, this reluctance is because many tribal lands are held in trust by the Federal Government or states and cannot be owned or kept as collateral by private lenders. Moreover, tribal communities located in rural or remote areas face further complications with housing recovery because costs to move building materials can become prohibitively expensive. In addition, many tribes have not established building codes. This creates challenges when Federal funds are provided for disaster-damaged facilities, as no established standard exists with which to rebuild.



CONCLUSION

Throughout 2015, the Nation continued to strengthen its national preparedness. As the 2016 *National Preparedness Report* shows, all five mission areas (Prevention, Protection, Mitigation, Response, and Recovery) saw progress, and the Nation continued to develop the capacities needed to address the hazards and threats the Nation faces. In some areas, however, persistent challenges remain and new preparedness challenges emerged.

Looking across all five mission areas, the 2016 *National Preparedness Report* identifies three capabilities to sustain. For these capabilities—Planning; Public Health, Healthcare, and Emergency Medical Services; and Risk and Disaster Resilience Assessment—the Nation has developed acceptable levels of performance, but will require sustained effort to maintain proficiency and meet emerging challenges.

This *National Preparedness Report* highlights six core capabilities as national areas for improvement: Cybersecurity; Economic Recovery; Housing; Infrastructure Systems; Natural and Cultural Resources; and Supply Chain Integrity and Security. The *National Preparedness Report* has identified Cybersecurity, Housing, and Infrastructure Systems as areas for improvement since 2012, but continuing challenges highlight the difficult task of improving these areas.

As the 2016 *National Preparedness Report* demonstrates, individuals and communities, private and nonprofit sectors, faith-based organizations, and all levels of governments continued to build, sustain, and deliver the core capabilities needed to achieve the *National Preparedness Goal* of a secure and resilient Nation. While new threats and challenges will continue to appear, the Nation will continue to adapt to address them.





Appendix A:

GRANT CASE STUDIES

Federal homeland security grants play an important role in helping state, local, tribal, and territorial governments build and sustain capabilities, and implement the National Preparedness System. In 2015, the Federal Emergency Management Agency (FEMA) partnered with stakeholders in California, Minnesota, Michigan, and Philadelphia to illustrate the impact of Federal grants on preparedness. FEMA chose these locations to highlight grant-funded projects focused on Housing and Cybersecurity, which have been national areas for improvement in five successive *National Preparedness Reports*, and on other innovative projects that may be of interest to readers.

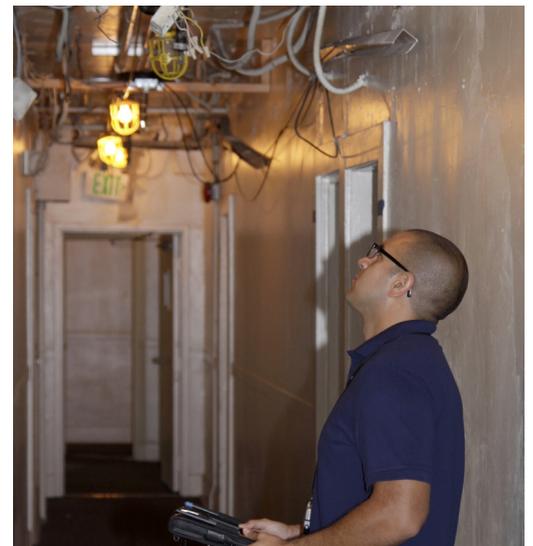
FEMA also completed two case studies focused on grant projects that positively affected the 2014 response to Ebola virus disease. The first explored how the National Domestic Preparedness Consortium (NDPC), which receives annual grant funding from Congress, rapidly developed and delivered a training course for emergency responders on preparing for Ebola virus disease. The second was a joint effort with the U.S. Department of Health and Human Services (HHS) and New York City to document how preparedness investments over time enabled the city to quickly implement an effective response to the disease.

California: At a Glance

California has received over **\$3 billion in Federal homeland security grants since 2006**. Recently, the state has used grant funds to develop and implement a regional planning approach for the provision of disaster housing in the event of a catastrophic earthquake.

Los Angeles Regional Disaster Housing Planning

The City of Los Angeles established the region’s first Disaster Housing Working Group with a \$702,000 investment from the FEMA Regional Catastrophic Preparedness Grant Program (RCPGP). The working group, which includes more than 30 regional housing industry and emergency management representatives, created the region’s first-ever set of disaster housing research reports and planning guides and templates to help local jurisdictions identify planning challenges and best practices in interim housing, housing replacement, and long-term recovery. The planning products cover a five-county region that is home to over 18 million residents. In 2014, the working group tested the plans through a workshop exercise based on a 7.8-magnitude earthquake along the southern San Andreas Fault. Exercise participants produced an improvement plan for improving property safety assessments, enhancing disaster housing planning and funding, and integrating disaster housing into the region’s emergency management system.



In addition to the working group, Los Angeles used \$116,000 in FEMA RCPGP funds to develop a software tool to expedite residential property damage and safety assessments following a disaster. The Safety Assessment Module allows property inspectors to quickly create accurate damage assessment reports to determine if properties are safe to re-enter.

Bay Area Regional Disaster Housing Planning

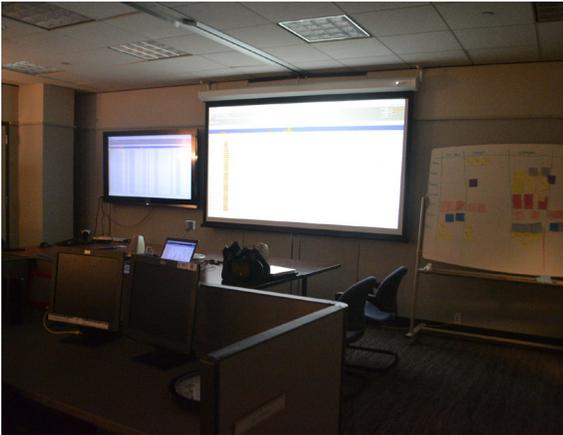
Using \$1.62 million in FEMA RCPGP funds, the Bay Area Urban Areas Security Initiative (UASI) partnered with regional and local agencies to develop interim housing and sheltering plans. The plans identify over 250,000 interim housing locations, such as vacant rental properties and available hotel rooms, to house displaced disaster survivors for up to one year after an event. In addition, the Bay Area UASI coordinated with the American Red Cross to establish plans to provide disaster sheltering during and after an incident. The plans identify procedures to assess the needs of shelter populations to determine a list of additional resources that shelter managers may need to request.

Minnesota: At a Glance

From 2006 to 2014, Minnesota received over **\$298 million in preparedness grant funding**. The state has used a share of this grant funding to invest in innovative cybersecurity projects, including an effort to enhance local jurisdictions’ ability to monitor and detect malicious cyber activity.

Statewide Security Monitoring Initiative

Minnesota invested \$4.4 million in FEMA Homeland Security Grant Program (HSGP) funds to help protect local governments that lack the resources to monitor their networks for malicious cyber activity. With support from MN.IT Services (the state’s information technology agency), county and city governments used grant funds to purchase intrusion-detection software and hardware. MN.IT Services helps local governments monitor cybersecurity baseline activity and identify unusual traffic or intrusions on computer networks. Since MN.IT Services operates as a fee-for-service provider, grant funds provided crucial startup capital for establishing technical assistance agreements between MN.IT Services and local jurisdictions.



Under the Statewide Security Monitoring Initiative, MN.IT Services has installed software and firewall technology in 25 counties since 2012. For example, Cook County—a small northern jurisdiction with limited resources to devote to cybersecurity—has used the program to revamp its information technology infrastructure and replace outdated systems via a two-year service agreement with MN.IT Services.

Michigan: At a Glance

Michigan has received over **\$435 million in preparedness grant funding** since 2006. Michigan has used a portion of these grants to enhance response capabilities, including an innovative project to use an unmanned aircraft system to support state response teams.

Unmanned Aircraft System

In 2013, the Michigan State Police used \$162,000 in FEMA HSGP funds to purchase an unmanned aircraft system to better conduct real-time assessments during an incident and collect detailed post-incident data. The device provides a unique operational advantage through its ability to quickly deploy and capture high-resolution images and videos from a lower elevation—and at a lower cost per flight hour—than a manned helicopter.



system statewide. Since then, Michigan has deployed the unmanned aircraft system to support response operations for over 40 incidents. Following a 2015 tornado, the Michigan State Police used the unmanned aircraft system to survey damage, search for survivors, and collect detailed accident information for further analysis.

Michigan has developed guidance for operating the unmanned aircraft system, including a pre-flight checklist, a deployment manual, and reporting requirements, and has shared these practices nationally. Michigan developed this guidance with the American Civil Liberties Union to earn public buy-in and support.

Philadelphia, PA: At a Glance

From 2006 through 2014, the Philadelphia UASI received over **\$171 million in preparedness grant funding**. Philadelphia used some of these funds to enhance its law enforcement and emergency preparedness capabilities, and invested in projects like the Tourniquet Program that proved vital during the response to the May 2015 Amtrak derailment.

Tourniquet Program

Following the Boston Marathon bombing and a series of Philadelphia-area active shooter events, the Philadelphia Police Department identified training and equipment gaps related to attending to the wounds of multiple victims. To address this gap, the department used \$125,000 in FEMA UASI funds to purchase 5,000 tourniquets and train officers on their proper use. Officers now carry tourniquets as part of their everyday patrol equipment, which allows them to better respond to medical emergencies in the field. Tourniquets are also an important lifeline for the officers, themselves. Officers are trained to self-administer the tourniquets if they are injured, increasing their odds of surviving a severe wound.



Since 2013, Philadelphia Police Department officers have used the tourniquets to save the lives of 10 gunshot victims. Deployed to the scene within minutes of the Amtrak derailment, patrol officers used approximately 51 tourniquets to treat injured passengers.



National Domestic Preparedness Consortium: At a Glance

NDPC is a partnership of several nationally recognized organizations charged with enhancing the preparedness of Federal, state, local, and tribal emergency responders to reduce the Nation’s vulnerability to high-consequence, all-hazard events. Since its inception in 1998, the consortium has received **over \$2.1 billion in grant funding from Congress** to identify, develop, test, and deliver training to state and local emergency responders. In late 2014, FEMA and NDPC recognized a national need for Ebola virus disease-related training, and quickly developed and delivered a new training course to responders across the Nation.

NATIONAL DOMESTIC PREPAREDNESS CONSORTIUM MEMBER ORGANIZATIONS

- Center for Domestic Preparedness
- The Energetic Materials Research and Testing Center
- National Center for Biomedical Research and Training
- National Emergency Response and Rescue Training Center
- National Nuclear Security Administration/ Counterterrorism Operations Support Center for Radiological/Nuclear Training
- National Disaster Preparedness Training Center
- Security and Emergency Response Training Center

Personal Protective Measures for Biological Events Course (PER-320)

After the Centers for Disease Control and Prevention (CDC) confirmed the first case of Ebola virus disease in the United States, FEMA and the Center for Domestic Preparedness (CDP)—an NDPC member—rapidly mobilized to develop a training course for emergency responders to learn how to properly operate in potential Ebola virus disease environments. CDP began receiving requests to train response personnel in the specifics of interacting with possible Ebola virus disease patients after two nurses in Dallas, Texas, contracted the disease, despite wearing personal protective equipment. While existing CDP courses addressed infectious disease preparedness, no single course comprehensively covered the Ebola virus disease threat. In response, the center integrated content from five existing courses to develop PER-320. Capitalizing on existing relationships, CDP developed the course in just four days, and delivered the inaugural course to Dallas first responders on October 23, 2014.



In the first 10 days after the course was made available, CDP received 110 requests for 4,800 students. Unable to meet this demand alone, the center asked all NDPC partners to assume responsibility for outreach, coordination, and course delivery in an assigned region of the country. Through this regional strategy, consortium partners delivered over 160 courses to almost 4,150 students through December 2015. Students successfully applied lessons learned from the course to their professions, including training other responders, adopting new procedures for putting on and taking off protective gear, and modifying screening procedures for emergency medical dispatch. The consortium's ability to successfully react to a national need for training highlights a model that NDPC will replicate in future emergency situations.

New York City: At a Glance

From 2006 to 2014, New York City received over **\$2.1 billion in preparedness and public health grant funding**. A number of factors, such its population density and large number of international visitors, contribute to the city's heightened risk for the spread of communicable diseases. Accordingly, the city has invested heavily in improving infectious disease preparedness and response capabilities; Ebola virus disease was no exception. Through March 2015, New York City agencies spent \$21 million responding to the virus. Federal preparedness and public health grant-supported projects in the areas of pre-incident coordination, preparedness activities, and response lessened the financial burden and helped New York City effectively address its 16 suspected cases (including one positive case) of Ebola virus disease since 2014.

Pre-Incident Coordination

Existing systems and previous efforts to prepare for highly contagious diseases strengthened New York City agencies' ability to cooperatively address the threat of Ebola virus disease. Over a decade of joint planning, training, exercises, and incident response have contributed to New York City's strong and coordinated interagency infrastructure.

- During the Ebola virus disease response, New York's **Citywide Incident Management System (CIMS)** helped city agencies coordinate, plan, and interact effectively under the principles of Unified Command. With \$1.4 million in UASI funds, New York City's Office of Emergency Management developed CIMS and trained 50,000 individuals on its effective use. CIMS defines roles and responsibilities for various partners performing emergency response operations. New York City Emergency Management also invested \$125,000 in FEMA UASI funds to support executive-level tabletop exercises, which allowed the mayor's office to practice using the CIMS framework to make decisions during an emergency.
 
- The Department of Health and Mental Hygiene's (DOHMH's) **Employee Databank**, a component of the department's internal incident command system, helped to effectively coordinate planning and response throughout the agency. DOHMH used Employee Databank, which contains information on every staff member's Incident Command System role, to surge physicians, call center staff, and public outreach staff needed to support the response. In 2012, the department invested \$240,600 in HHS Public Health Emergency Preparedness grants to expand Employee Databank's capabilities to allow administrators to pre-assign a response role for each staff member and to query the database by skill. These features allowed the department to match employees with particular skill sets to specific needs during the Ebola virus disease response. For example, DOHMH used Employee Databank to identify staff members capable of communicating health information to citizens whose first language is not English.

Preparedness Activities

New York City took advantage of prior grant-funded preparedness projects to ensure that city employees could safely handle a patient who tested positive for the Ebola virus disease, and keep the public informed about the threat.

- NYC Health + Hospitals and the Greater New York Hospital Association conducted **no-notice mystery patient drills** at all of their member hospitals in the city. These drills, which are required by the New York State Department of Health, revealed lessons learned and preparedness gaps that the hospitals addressed before the city's first positive case. For example, the drills underscored the need for closer coordination with the New York City Fire Department (FDNY). The department invested \$1 million in FEMA UASI grants to support the drills and improve coordination with area hospitals.
 
- FDNY's **Hazardous Materials Tactical units**, which the department had developed to respond to bioterrorism threats, facilitated safe transport and hand-off of potential Ebola virus disease patients. These units have responded to 14 possible Ebola virus disease cases through November 2015. The FDNY invested \$1.9 million in HHS Public Health Emergency Preparedness grants to purchase decontamination units and personal protective equipment for the units' use in the response.
- DOHMH deployed **Community Outreach Teams** to educate the public about the risk of infection

and how to report symptoms. As of July 2015, the teams had distributed over 167,000 cards with disease risk information and organized over 116 public informational events. A HHS Public Health Emergency Preparedness grant of \$170,000 supported an initial investment in training and equipment for the teams in 2011.

Response

New York City has been working with the Federal Government for many years to enhance its epidemiological capability in detecting, investigating, and responding to infectious diseases and biological threats. These projects proved critical to the city's effective response to Ebola virus disease.

- During the response, DOHMH's **Public Health Laboratory** invested \$221,000 in HHS Public Health Emergency Preparedness grants to purchase equipment and train staff members on proper handling procedures in order to prepare for Ebola virus disease testing. The laboratory has so far performed 12 tests for the disease and helped other clinical laboratories throughout the city prepare to safely handle a specimen that might contain the virus.
- New York City's Ebola virus disease-positive patient received treatment in NYC Health + Hospitals / Bellevue's state-of-the-art **isolation and special pathogens unit**. The city had originally built this unit to treat drug-resistant tuberculosis patients. This existing isolation capability helped New York City to quickly contain the virus and ensure that the patient recovered. Since 2012, NYC Health + Hospitals / Bellevue has invested \$490,000 in HHS Hospital Preparedness Program grants in the unit, of which a large part supported essential upgrades to meet the needs of healthcare personnel and Ebola virus disease patients.
- Through the DOHMH's **active monitoring operations**, New York City was able to rapidly detect and arrange treatment for any travelers returning from countries affected by Ebola virus disease who began to present symptoms of the virus. As of October 2015, the department had monitored a total of 5,200 persons. DOHMH adapted an existing database called Survey Builder—developed with \$46,000 in HHS Public Health Emergency Preparedness funds to support Hurricane Sandy recovery operations—to quickly create an active monitoring system. Department staff members contacted each person under monitoring twice a day to check on their overall health and collect temperature readings.

Years of investing Federal grant funds in preparedness activities helped New York City to rapidly prepare for and respond to Ebola virus disease, preventing the spread of the virus beyond a single patient. On November 11, 2014, less than a month after the initial diagnosis, New York City's one Ebola virus disease patient made a full recovery, and the mayor declared the city "Ebola-free."



APHIS	Animal and Plant Health Inspection Service
ASPR	Office of the Assistant Secretary for Preparedness and Response, U.S. Department of Health and Human Services
CBP	U.S. Customs and Border Protection
CDC	Centers for Disease Control and Prevention, U.S. Department of Health and Human Services
CDP	Center for Domestic Preparedness
CFATS	Chemical Facility Anti-Terrorism Standards
CIMS	Citywide Incident Management System, New York City
DHS	U.S. Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
DOC	U.S. Department of Commerce
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOHMH	Department of Health and Mental Hygiene, New York City
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
DOT	U.S. Department of Transportation
EDA	U.S. Economic Development Administration
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FCC	Federal Communications Commission
FDNY	New York City Fire Department
FEMA	Federal Emergency Management Agency
GAO	U.S. Government Accountability Office
HHS	U.S. Department of Health and Human Services
HPAI	Highly pathogenic avian influenza
HSGP	Homeland Security Grant Program
HUD	U.S. Department of Housing and Urban Development
IOM	Institute of Medicine
IPAWS	Integrated Public Alert and Warning System
IRS	Internal Revenue Service
NASA	National Aeronautics and Space Administration
NDPC	National Domestic Preparedness Consortium
NIST	National Institute of Standards and Technology
NIH	National Institutes of Health, U.S. Department of Health and Human Services
NIOSH	National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services

NNSA	National Nuclear Security Administration
NOAA	National Oceanic and Atmospheric Administration
NPPD	National Protection and Programs Directorate
ODNI	Office of the Director of National Intelligence
OPM	U.S. Office of Personnel Management
OSHA	Occupational Safety and Health Administration
RCPGP	Regional Catastrophic Preparedness Grant Program
SBA	U.S. Small Business Administration
SOP	Standard operating procedures
TRACIE	Technical Resources, Assistance Center, and Information Exchange, U.S. Department of Health and Human Services
TSA	Transportation Security Administration
UASI	Urban Area Security Initiative
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
VA	U.S. Department of Veterans Affairs



Homeland Security