



Introduction to

EMERGENCY MANAGEMENT

SIXTH EDITION



George D. Haddow Jane A. Bullock Damon P. Coppola

@Seismicisolation

B
H

Introduction to Emergency Management

SIXTH EDITION

George D. Haddow

Jane A. Bullock

Damon P. Coppola



AMSTERDAM • BOSTON • HEIDELBERG • LONDON • NEW YORK • OXFORD
PARIS • SAN DIEGO • SAN FRANCISCO • SINGAPORE • SYDNEY • TOKYO

Butterworth-Heinemann is an imprint of Elsevier

Table of Contents

Title page

Copyright

Dedication

Foreword

Acknowledgments

Introduction

Online Resources

1. The Historical Context of Emergency Management

Abstract

Introduction

Early History: 1800–1950

The Cold War and the Rise of Civil Defense: The 1950s

Changes to Emergency Management: The 1960s

The Call for a National Focus on Emergency Management: The 1970s

Civil Defense Reappears as Nuclear Attack Planning: The 1980s

An Agency in Trouble: 1989–92

The Witt Revolution: 1993–2001

Terrorism: 2001

The Department of Homeland Security: 2001–05

The Hurricane Katrina Debacle: 2005

The Steps Leading to the Katrina Debacle

Post-Katrina Changes

The Obama Administration's Approach to Emergency Management

Whole Community Is a Philosophical Approach in How to Conduct the Business of Emergency Management

FEMA and Social Media

The Strategic Foresight Initiative

Conclusion

Important Terms

Self-Check Questions

Out-of-Class Exercises

2. Natural and Technological Hazards and Risk Assessment

Abstract

Introduction

Natural Hazards

Technological Hazards

Terrorism

Risk Management Technology

Social and Economic Risk Factors

Conclusion

Important Terms

Self-Check Questions

Out-of-Class Exercises

3. The Disciplines of Emergency Management: Mitigation

Abstract

Introduction

Mitigation Tools

Impediments to Mitigation

Federal Mitigation Programs

Conclusion

Important Terms

Self-Check Questions

Out-of-Class Exercises

4. The Disciplines of Emergency Management: Preparedness

Abstract

Introduction

A Systems Approach: The Preparedness Cycle

Mitigation Versus Preparedness

Preparedness: The Emergency Operations Plan

FEMA's Whole Community Concept

The National Preparedness System

Evacuation Planning

Emergency Planning for Access and Functional Needs Populations

Preparedness Equipment

Education and Training Programs

The FEMA Emergency Management Institute and National Fire Academy

Public Preparedness Education

Emergency Management Exercises

Evaluation and Improvement

Preparedness: A Whole Community Effort

Preparedness Grant Programs

Business Continuity Planning and Emergency Management

Conclusion

Case Studies

Important Terms

Self-Check Questions

Out-of-Class Exercises

5. Communications

Abstract

Mission

Assumptions

The Changing Media World

A Communication Plan

Information Coming In

Information Going Out

Messengers

Staffing

Training and Exercises

Monitoring, Updating, and Adapting

Conclusion

Important Terms

Self-Check Questions

Key Terms

6. The Disciplines of Emergency Management: Response

Abstract

Introduction

The Local Response

Local Emergency Managers

The State Response

Volunteer Groups' Response

The Incident Command System (ICS)

The Federal Response

The National Response Framework (NRF)

Federal Assistance in Disaster Response

Organizing Support—The Emergency Support Function (ESF)

The Mission Assignment (MA) Process

NRF Operations Coordination

Incident Level Coordination: The Joint Field Office (JFO)

FEMA Incident Management Assistance Teams (IMATs)

Key Federal Response Officials

State-to-State Support: The Emergency Management Assistance Compact (EMAC)

Conclusion

Important Terms

Self-Check Questions

Out-of-Class Exercises

7. The Disciplines of Emergency Management: Recovery

Abstracts

Introduction
Fundamentals of Disaster Recovery
Recovery Coordination and Leadership
Recovery Sectors
Federal Government Disaster Recovery Assistance
FEMA Recovery Assistance Programs
FEMA's Individual Assistance Recovery Programs
FEMA's Public Assistance Grant Programs
The Disaster Relief Fund
Other Federal Agency Disaster Recovery Funding
National Voluntary Relief Organizations
Recovery Planning Tools
Pre-Disaster Recovery Planning
Conclusion
Important Terms
Self-Check Questions
Out-of-Class Exercises

8. International Disaster Management

Abstracts
Introduction
Disasters in Developing Nations
International Disasters Defined
Important Issues Influencing the Response Process
United Nations Disaster Management Efforts
Nongovernmental Organizations
Assistance Provided by the US Government
The International Financial Institutions
Conclusion
Important Terms
Self-Check Questions
Out-of-Class Exercises

9. Emergency Management and the Terrorist Threat

[Abstracts](#)

[Introduction](#)

[Changes in Emergency Management and the War on Terrorism](#)

[The Terrorist Threat](#)

[Terrorist Actions](#)

[The Monumental Human, Economic, and Social Costs of the September 11th Attacks](#)

[Statutory Basis of Terror Threat Management](#)

[Homeland Security Organizations](#)

[Other Agencies Participating in Community-Level Funding](#)

[Funding for First Responders and Emergency Management](#)

[Communicating Threat Information to the American People](#)

[Conclusion](#)

[Important Terms](#)

[Self-Check Questions](#)

[Out-of-Class Exercises](#)

10. The Future of Emergency Management

[Abstracts](#)

[Where Is Emergency Management Now?](#)

[Future Challenges and Opportunities](#)

[Moving Forward](#)

[Conclusion](#)

Appendix A. Acronyms

Appendix B. Emergency Management Websites

Bibliography

Glossary

Index

Copyright

Butterworth-Heinemann is an imprint of Elsevier
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States

Copyright © 2017 Elsevier Inc. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: www.elsevier.com/permissions.

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

Notices

Knowledge and best practice in this field are constantly changing. As new research and experience broaden our understanding, changes in research methods, professional practices, or medical treatment may become necessary.

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. In using such information or methods they should be mindful of their own safety and the safety of others, including parties for whom they have a professional responsibility.

To the fullest extent of the law, neither the Publisher nor the authors, contributors, or editors, assume any liability for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

British Library Cataloging-in-Publication Data

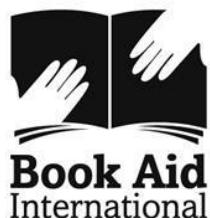
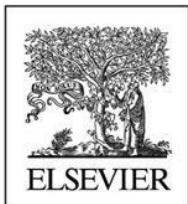
A catalog record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

A catalog record for this book is available from the Library of Congress

ISBN: 978-0-12-803064-6

For Information on all Butterworth-Heinemann publications visit our website at
<https://www.elsevier.com/>



Working together
to grow libraries in
developing countries

www.elsevier.com • www.bookaid.org

Publisher: Katey Birtcher

Acquisition Editor: Steve Merken

Editorial Project Manager: Nate McFadden

Production Project Manager: Priya Kumaraguruparan

Designer: Gregory Harris

Typeset by MPS Limited, Chennai, India

Dedication

The authors dedicate this book to Chief Rich Marinucci. Rich brought a visionary leadership to the US Fire Service that improved the safety of America's 1.15 million firefighters and helped to educate all Americans about the critical role that fire personnel play in our everyday lives. His commitment to bridging the gap between the fire and emergency management communities increased the resilience of towns and cities nationwide. Rich remains an inspiration and a friend to all of us.

Foreword

Brad Gair, Vice President Emergency Management and Enterprise Resilience, NYU Langone Medical Center, New York, NY, United States

Twenty-five years ago when I started out in emergency management, most of us were only part-time emergency managers and had other larger responsibilities in our organizations. In my case, it was building roads, bridges, and flood control projects in rural Arizona. When a disaster happened, we stopped whatever we were working on, managed the emergency, and then went back to our regular work.

We did the best we could with the time we could allocate to the profession, but in those days, there were few places to turn to for formal guidance. There were a couple of places where you could get a college degree in emergency management, and if you looked hard enough you might find some useful information in various books and journal articles, but there was nothing comprehensive.

All of this changed post-9/11 and again post-Hurricane Katrina. Our nation has had to adapt to the growing threat of more frequent, more costly, and more complex disasters. Terrorists are no longer just faraway adversaries plotting large-scale attacks; today they may also be from any of our own communities, planning and executing small but effective attacks that kill and injure dozens. Warmer oceans and higher sea levels mean that powerful hurricanes are increasingly capable of impacting major population centers and causing damages at unprecedented levels. Now with our dependence on technology growing exponentially, anyone with a computer and some basic cyber skills can already cause significant disruptions, and in the coming years will be able to wreak devastation at a vastly disproportionate scale. Add to this the ongoing substantive risk of nuclear, biological, electromagnetic pulse, and other natural and manmade crises, and disaster management can be an extremely daunting task.

Fortunately, as the challenges have grown, so has our emergency management profession. We now have a network of seasoned, full-time emergency managers across the country, many of whom have gained broad experience in preparing for and dealing with major disasters in recent years. We share our knowledge, our hard-learned lessons, and our best practices, and are now considered to be part of one of the fastest growing and most critical sectors nationwide.

Emergency managers traditionally found their way into the business, rather than selecting emergency management as their vocation. All of that has changed. There are now hundreds of colleges and universities in the United

States and around the world offering degrees in emergency management, national security, and related fields. The next generation of emergency managers will have purposefully selected this career and will be better prepared than their predecessors to use the tools, technologies, and strategies needed for the future.

The one thing that has not changed is the basics of emergency management. No matter how complex and difficult the threats become, we still have to start with our proven processes: we have to prepare for all-hazards, including planning, training, and exercises; we have to respond effectively and efficiently making certain that we have the proper command, control, communication and coordination mechanisms in place; we need to understand recovery processes and programs to help our communities build back better and stronger after a disaster; and perhaps most importantly, we need to find new and innovative ways to make our communities and our nation more resilient to a wide variety of hazards.

To accomplish this, our next generation of emergency managers needs a foundational resource that teaches the key principles of emergency management and what it truly means to be an emergency manager. Since 2003, *Introduction to Emergency Management* has been that resource. Now in this sixth edition, George Haddow, Jane Bullock, and Damon Coppola have closely studied current trends in emergency management, reviewed lessons learned from recent major disasters, and analyzed the emerging threats of the future to create this latest edition of the definitive textbook on the subject, used in institutions of higher education worldwide.

I have been fortunate in my career to have had the opportunity to hold key leadership positions on some of the most notable disasters of our times, including as Federal Recovery Officer for the World Trade Center attacks, as lead of the advance team for Housing Recovery on Hurricane Katrina, and as Director of Housing Recovery and Recovery Manager for New York City in the aftermath of Hurricane Sandy, and on all these incidents and many more, I have relied upon the same basic principles that you will learn about in *Introduction to Emergency Management*.

If you want to be an exceptional emergency manager, you are ultimately going to have to draw upon a variety of educational resources and your own professional experiences, and there is no better place to start than with this sixth edition of *Introduction to Emergency Management*. I strongly encourage you to read and study this book carefully and carry the key principles with you throughout what will hopefully be a long and productive career as a professional emergency manager.

Acknowledgments

The authors wish to thank the following individuals for their continued help and insight: Jack Harrald, Greg Shaw, Joseph Barbera, Irmak Renda-Tanali, Ollie Davidson, Sarp Yeletaysi, Garrett Ingoglia, Ryan Miller, Rene van Dorp, Erin McConnell, Wayne Blanchard, Sanjaya Bhatia, Liz Maly, Gerald Potutan, Gulzar Keyim, Tim Wilcox, Pam Chester, Amber Hodge, Paul Gottehrer, Todd Green, Nate McFadden, Brad Gair, Ehren Ngo, Fran McCarthy, Caroline Brassard, Betsy Millett, Abigail Abbott, Sara Scott, Pem McNerney, Ines Pearce, Steven Carter, David Gilmore, Jack Suwanlert, Barbara Johnson, Tawnne O'Connor, Matt Foster, Tyson Vaughn, Adam Jachimowicz, and Audra Kiesling.

We also thank the many professors, students, and practitioners who gave us valuable feedback on different aspects of the book and provided suggestions to make the text more relevant and useful.

Introduction

There is no country, no community, and no person immune to the impacts of disasters. Disasters, however, can be and have been prepared for, responded to, and recovered from, and have had their consequences mitigated to an increasing degree. Emergency Management is the profession and academic discipline that assumes, and is tasked with performing, these important functions. This book, *Introduction to Emergency Management*, is designed to provide the reader with a comprehensive foundation on the history, structure, organization, systems, and concerns that shape the management of disasters and other emergencies. Contained within are details and descriptions of contemporary emergency management practices and strategies, as well as descriptions of the key players involved in emergency management both within the United States and around the world. Our intent is to provide the reader with a working knowledge of how the functions of comprehensive emergency management operate and the influence they can have on everyday life.

This sixth edition represents a documentation of the current status of the discipline as it gravitates towards a state of equilibrium. The 2001 terrorist attacks set in motion a series of events that forever changed not only the way government jurisdictions at all levels (federal, state, and local) addressed the terrorism hazard, but also the way members of the public, nongovernmental organizations, and businesses prepare for disaster events both independently of and in concert with these agencies. Many felt that a lot of these actions were knee-jerk in nature and failed to preserve the positive lessons of previous years, especially those of the highly regarded James Lee Witt years (1992–2000). In 2005, the troubled response to Hurricane Katrina confirmed such fears, and had the effect of recalibrating our comprehensive approach to all-hazards risk assessment by reminding all emergency management practitioners that regardless of the public, policy, and media agendas, emergency management must be guided by scientific and statistical risk analysis.

Since the writing of the last edition of this textbook, FEMA has continued in its drive to shape the emergency management doctrine, producing a number of frameworks and guides that complement the response-oriented National Response Framework. It continues to reassert itself as the federal focal point for federal, state, and local emergency management—a role that suffered following the creation of the Department of Homeland Security and the subsequent implementation of DHS Secretary Chertoff's Six Point Agenda. FEMA has regained its status as the agency responsible for the bulk of the nation's emergency management policy, direction, and federal-level operations—yet many feel it still remains stifled under the umbrella of an organization so heavily-focused on the singular goal of reducing threats to national security. Compared to its years as an independent, Cabinet-level agency, FEMA remains

subject not only to indirect access to the president and a diminished decision-making authority, but also the need to conform to a strategic focus held by an agency whose fundamental mission is markedly different from its own.

In 2005, we saw a national system of emergency management—once regarded as one of the most effective and emulated systems in the world—proven incompetent in responding to an event that had been long predicted, planned for, and studied; Hurricane Katrina. Almost twelve years later, FEMA is finally beginning to salvage that reputation. This edition will examine how FEMA has evolved as a result of the legislation enacted in the aftermath of Hurricane Katrina, obstacles identified in the aftermath of Hurricane Sandy, and various changes in leadership and policy within and outside the agency.

While the book emphasizes the US domestic system of emergency management, many of the experiences discussed, lessons learned, and emerging trends are replicable to emergency management systems around the world. Emergency management in the United States has experienced every form of disaster: natural, man-made, and intentional. The lessons learned from these experiences, the changes made in response to these events, and how the system continues to evolve because of climate change and other emerging threats, provides a solid landscape to examine what emergency management is or could be.

However, this book is not exclusively focused on FEMA. State and local emergency management organizations are the subjects of many of the included case studies, and their collaborative affiliations with FEMA are discussed at length throughout the text. One full chapter, in fact, is dedicated to how emergencies are managed at the international level when the capacity of whole countries or regions fall short of what is required to manage the disaster at hand. With greater frequency, events such as the 2004 Asian Earthquake and Tsunami, Cyclone Nargis in Burma in 2008, the Sichuan and Haiti Earthquakes, and most recently the Great East Japan Earthquake, have highlighted the need for a more robust international emergency management system. Through their own domestic efforts, and the efforts of the United Nations system vis-à-vis the 2016 Sendai Framework for Disaster Risk Reduction, governments across the globe are focusing more attention on the issue.

A brief summary of the contents and special features of this edition follows:

- **Chapter 1**, “The Historical Context of Emergency Management,” includes a brief discussion of the historical, organizational, and legislative evolution of emergency management in the United States by tracing the major changes triggered by disasters or other human or political events, including the creation of the Department of Homeland Security. This chapter includes an analysis of the organizational, legislative, and policy changes made in emergency management both pre- and post-Hurricane Katrina.
- **Chapter 2**, “Natural and Technological Hazards and Risk Assessment,” identifies and defines the hazards confronting emergency management.
- **Chapter 3**, “The Disciplines of Emergency Management: Mitigation,” discusses what the function of mitigation is and what the strategies and programs applied by emergency management or other disciplines to reduce

the impacts of disaster events are.

- [Chapter 4](#), “The Disciplines of Emergency Management: Preparedness,” catalogs the broad range of programs and processes that comprise the preparedness function of modern emergency management.
- [Chapter 5](#), “The Disciplines of Emergency Management: Communications,” breaks from the more traditional approach to emergency management and focuses on why communications with the public, with the media, and with partners are critical to emergency management in the 21st century.
- [Chapter 6](#), “The Disciplines of Emergency Management: Response,” focuses on the essential functions and processes of responding to a disaster event.
- [Chapter 7](#), “The Disciplines of Emergency Management: Recovery,” describes the broad range of government and voluntary programs available to assist individuals and communities in rebuilding in the aftermath of a disaster.
- [Chapter 8](#), “International Disaster Management,” provides an overview of current activity in international emergency management through an examination of selected international organizations.
- [Chapter 9](#), “Emergency Management and the Terrorist Threat,” describes how terrorist events and the threat of future attacks have altered risk perception and impacted the emergency management profession.
- [Chapter 10](#), “The Future of Emergency Management,” looks at modern trends in emergency management and provides insights, speculations, recommendations from the authors about where emergency management is or should be headed in the future.

Our goal in writing this book was to provide readers with an understanding of emergency management, insight into how events have shaped the discipline, and thoughts about the future direction of emergency management. Evolution of emergency management in the United States, as is true elsewhere, is largely reactionary. While events like Sep. 11, 2001, hurricanes Katrina and Sandy, and other major disasters highlight our strengths and expose our weaknesses, it is possible to be forward-thinking and otherwise predictive in planning for emergency management capacity needs, and our hope is to prepare the growing cadre of emergency management professionals with the knowledge required to analyze such needs with accuracy. Evolving threats, including the prospect of global climate change, and our changing social, economic, and political environment, demand new and innovative approaches and leadership. We hope this text will motivate each reader to accept the challenge.

Online Resources

Thank you for selecting Butterworth Heinemann's *Introduction to Emergency Management, Sixth Edition*. To complement the learning experience, we have provided online tools to accompany this edition. Students can find additional learning materials on the companion site, including the full text of the Stafford Act, at <http://booksite.elsevier.com/9780128030646>.

Please consult your local sales representative with any additional questions. You may also email the Academic Sales Team at textbook@elsevier.com.

Qualified adopters and instructors can access valuable material for free by registering at <http://textbooks.elsevier.com/web/manuals.aspx?isbn=9780128030646>.

The Historical Context of Emergency Management

Abstract

This chapter discusses the historical, organizational, and legislative history of modern emergency management in the United States. Some of the significant events and people that have shaped the emergency management discipline over the years are reviewed. Understanding the history and evolution of emergency management is important because at different times, the concepts of emergency management have been applied differently. The definition of *emergency management* can be extremely broad and all encompassing. Unlike other, more structured disciplines, it has expanded and contracted in response to events, congressional desires, and leadership styles.

Keywords

Civil defense; Department of Homeland Security (DHS); emergency management; Federal Emergency Management Agency (FEMA) and National Disaster Recovery Framework (NDRF)

WHAT YOU WILL LEARN

- The early roots of emergency management
- The modern history of emergency management in the United States
- How FEMA came to exist and how it evolved during the 1980s, 1990s, and the early 21st century
- The sudden changes to modern emergency management that resulted from the 9/11 terrorist attacks and Hurricane Katrina
- Changes made by post-Hurricane Katrina legislation and a new administration in Washington, DC.
- Obama Administration approach to emergency management
- Analysis of legislation to FEMA programs passed in the aftermath of Hurricane Sandy

Introduction

Emergency management has its roots in ancient history. Early hieroglyphics depict cave dwellers trying to deal with disasters. The Bible speaks of the many disasters that befell civilizations. In fact, the story of Noah warning his neighbors about an impending flood, and his subsequent building of an ark to preserve the planet's biodiversity, could be interpreted as a very early lesson in risk control. As long as there have been disasters, individuals and communities have tried to find ways to fix them. However, organized attempts at disaster recovery did not occur until much later in modern history.

This chapter discusses the historical, organizational, and legislative history of modern emergency management in the United States. Some of the significant events and people that have shaped the emergency management discipline over the years are reviewed. Understanding the history and evolution of emergency management is important because at different times, the concepts of emergency management have been applied differently. The definition of *emergency management* can be extremely broad and all-encompassing. Unlike other, more structured disciplines, it has expanded and contracted in response to events, congressional desires, and leadership styles.

Since the turn of the current century, formative events and selections in leadership, more than anything else, have spurred dramatic changes to emergency management in the United States. The terrorist attacks of Sep. 11, 2001 led to massive organizational changes and programmatic shifts in emergency management. Many believe that these changes undermined the effective national system of emergency management that had evolved during the 1990s and led to the profound failure of all levels of emergency management in response to Hurricane Katrina in 2005.

A simple definition for emergency management is “a discipline that deals with risk and risk avoidance.” Risk represents a broad range of issues and includes an equally diverse set of players. The range of situations that could possibly involve emergency management or the emergency management system is extensive. This supports the premise that emergency management is integral to the security of everyone’s daily lives and should be integrated into daily decisions and not just called on during times of disaster.

Emergency management is an essential role of government. The Constitution gives the states the responsibility for public health and safety—hence the responsibility for public risks—with the federal government in a secondary role. The federal role is to help when the state, local, or individual entity is overwhelmed. This fundamental philosophy continues to guide the government function of emergency management.

Based on this strong foundation, the validity of emergency management as a government function has never been in question. Entities and organizations fulfilling the emergency management function existed at the state and local levels long before the federal government became involved. But as events occurred, as political philosophies changed, and as the nation developed, the

federal role in emergency management steadily increased.

In the aftermath of the failed response to Hurricane Katrina, extensive discussion about emergency management, particularly the response and recovery functions, has taken place. An ever-increasing presence of nonprofit organizations delivering support to their particular constituencies after Katrina has given rise to interest on the part of the nonprofit community to take on increased responsibilities for disaster response. To date this has not materialized, but steps have been taken at the federal level to apply a top-down approach to emergency management functions, particularly relative to planning for disasters. While the Post-Katrina Emergency Management Reform Act detailed changes to how federal emergency management functioned, many of the changes included in this legislation were overlooked or were slow to be adopted by the leadership at the Federal Emergency Management Agency (FEMA) and the Department of Homeland Security (DHS). With the election of Barack Obama as president in 2008, both Congress and the emergency management community looked forward to positive changes and support for a struggling discipline. Positive changes were made in the nomination of Craig Fugate, a very qualified state emergency management director from Florida, who came in with a promise to improve FEMA's response operations. With the support of Janet Napolitano, the former Secretary of the Department of Homeland Security, Administrator Fugate refocused the agency on preparedness and response. To some this has come at the cost of greatly reducing the agency's efforts to promote mitigation and to pass leadership of community recovery efforts to other federal agencies. Administrator Fugate has launched the concept of Whole Community as his personal program to change the dialog from victims to survivors. Over the course of Fugate's tenure, the agency was tested with major floods, the Joplin, Missouri tornadoes, increased wildfire activity and the significant impacts of Hurricane/Superstorm Sandy. The current period of emergency management is highlighted by the emergence of social media as a critical tool in disaster communications and response, and FEMA has taken full advantage of the new mediums. It has also been marked by effective responses to various disasters but a relatively low key profile for FEMA and emergency management as homeland security events and issues continued to dominate the disaster and political landscape. This chapter will discuss how the agency, FEMA, and emergency management evolved; the individuals and leadership that shaped it, and the events that precipitated change.

Early History: 1800–1950

In 1803, a congressional act was passed that provided financial assistance to a New Hampshire town that had been devastated by fire. This was the first example of the federal government becoming involved in a local disaster. It was not until Franklin Roosevelt's administration used government as a tool to stimulate the economy that the federal government began to make significant investments in emergency management functions.

During the 1930s, the Reconstruction Finance Corporation and the Bureau of Public Roads were both given the authority to make disaster loans available for repair and reconstruction of certain public facilities after disasters. The Tennessee Valley Authority was created during this time to produce hydroelectric power and, as a secondary purpose, to reduce flooding in the region.

A significant piece of emergency management legislation was passed during this time. The Flood Control Act of 1936 gave the US Army Corps of Engineers increased authority to design and build flood-control projects. This act has had a significant and long-lasting impact on emergency management in this country. This act reflected the philosophy that humans could control nature, thereby eliminating the risk of floods. Although this program would promote economic and population growth patterns along the nation's rivers, history has proven that this attempt at emergency management was both shortsighted and costly.

The Cold War and the Rise of Civil Defense: The 1950s

The next notable time frame for the evolution of emergency management was during the 1950s. The era of the Cold War presented the principal disaster risk as the potential for nuclear war and nuclear fallout. Civil defense programs proliferated across communities during this time. Individuals and communities were encouraged to build bomb shelters to protect themselves and their families from nuclear attack from the Soviet Union.

Almost every community had a civil defense director and most states had someone who represented civil defense in their state government hierarchy. By profession, these individuals were usually retired military personnel, and their operations received little political or financial support from their state or local governments. Equally often, their civil defense responsibilities were in addition to other duties.

Federal support for these activities was vested in the Federal Civil Defense Administration (FCDA), an organization with little staff or financial resources, whose main role was to provide technical assistance. In reality, the local and state civil defense directors were the first recognized face of emergency management in the United States.

A companion office to the FCDA, the Office of Defense Mobilization was established in the Department of Defense (DOD). The primary functions of this office were to allow for quick mobilization of materials and production and stockpiling of critical materials in the event of a war. It included a function called *emergency preparedness*. In 1958, these two offices were merged into the Office of Civil and Defense Mobilization.

The 1950s were a quiet time for large-scale natural disasters. Hurricane Hazel, a Category 4 hurricane, inflicted significant damage in Virginia and North Carolina in 1954; Hurricane Diane hit several mid-Atlantic and northeastern states in 1955; and Hurricane Audrey, the most damaging of the three storms, struck Louisiana and North Texas in 1957. Congressional response to these disasters followed a familiar pattern of ad hoc legislation to provide increased disaster assistance funds to the affected areas.

As the 1960s started, three major natural disaster events occurred. In a sparsely populated area of Montana, the Hebgen Lake earthquake, measuring 7.3 on the Richter scale, was proof that states other than California were at risk for severe earthquakes. Also in 1960, Hurricane Donna hit the west coast of Florida, and Hurricane Carla blew into Texas in 1961. The incoming Kennedy administration decided to make a change to the federal approach to such disasters. In 1961 it created the Office of Emergency Preparedness inside the White House to deal with natural disasters. Civil defense responsibilities remained in the Office of Civil Defense within the DOD.

Changes to Emergency Management: The 1960s

As the 1960s progressed, the United States would be struck by a series of major natural disasters. The Ash Wednesday storm in 1962 devastated more than 620 miles of shoreline on the East Coast, producing more than \$300 million in damages. In 1964, an earthquake measuring 9.2 on the Richter scale in Prince William Sound, Alaska, became front-page news throughout America and the world. This quake generated a tsunami that affected beaches as far down the Pacific Coast of California and killed 123 people. Hurricane Betsy in 1965 and Hurricane Camille in 1969 killed and injured hundreds of people and caused hundreds of millions of dollars in damage along the Gulf Coast.

As with previous disasters, the response was the passage of ad hoc legislation for funds. However, the financial losses resulting from Hurricane Betsy's path across Florida and Louisiana raised the issue of disaster insurance against future floods and a potential method to reduce continued government assistance after such disasters. Congressional interest was prompted by the unavailability of flood protection insurance on the standard homeowner policy. If this type of insurance was available, it was cost-prohibitive. These discussions eventually led to the passage of the National Flood Insurance Act of 1968, which created the National Flood Insurance Program (NFIP).

Congressman Hale Boggs of Louisiana is appropriately credited with steering this unique legislation through Congress. Unlike previous emergency management/disaster legislation, this bill sought to do something about the risk *before* the disaster struck. It brought the concept of *community-based mitigation* into the practice of emergency management. In simple terms, when a community joined the NFIP, in exchange for making federally subsidized, low-cost flood insurance available to its citizens, the community had to pass an ordinance restricting future development in its floodplains. The federal government also agreed to help local communities by producing maps of their community's floodplains.

Additional Research

In Oct. 2006, a report entitled *Costs and Consequences of Flooding and the Impact of the National Flood Insurance Program* was issued, which provided an overview of what the NFIP had accomplished. It is available at <http://bit.ly/29s6ulo>.

The NFIP began as a voluntary program as part of a political compromise that Boggs reached with then Senator Tom Eagleton of Missouri. As a voluntary program, few communities joined. After Hurricane Camille struck the Louisiana, Alabama, and Mississippi coasts in 1969, the goals of the NFIP to protect people's financial investments and to reduce government disaster expenditures were not being met. Change would not occur until Hurricane

Agnes devastated Florida in 1972.

George Bernstein, who was brought down from New York by President Nixon to run the Federal Insurance Administration (FIA) within the Department of Housing and Urban Development (HUD), proposed linking the mandatory purchase of flood insurance to all homeowner loans that were backed by federal mortgages. This change created an incentive for communities to join the NFIP because a significant portion of the home mortgage market was federally backed. This change became the Flood Insurance Act of 1972.

It is important to note how local and state governments chose to administer this flood risk program. Civil defense departments usually had the responsibility to deal with risks and disasters. Although the NFIP dealt with risk and risk avoidance, responsibilities for the NFIP were sent to local planning departments and state Departments of Natural Resources. This reaction is one illustration of the fragmented and piecemeal approach to emergency management that evolved during the 1960s and 1970s.

Critical Thinking

Can you think of any positive or negative aspects of disaster-driven evolutionary changes in the United States' emergency management system? What about for changes that occur in the absence of initiating disaster events?

The Call for a National Focus on Emergency Management: The 1970s

In the 1970s, the responsibility for emergency management functions was evident in more than five federal departments and agencies, including the Department of Commerce (weather, warning, and fire protection), the General Services Administration (continuity of government, stockpiling, and federal preparedness), the Treasury Department (import investigation), the Nuclear Regulatory Commission (power plants), and HUD (flood insurance and disaster relief).

With the passage of the Disaster Relief Act of 1974, which was prompted by the previously mentioned hurricanes and the San Fernando earthquake of 1971, HUD possessed the most significant authority for natural disaster response and recovery through the NFIP under the FIA and the Federal Disaster Assistance Administration (disaster response, temporary housing, and assistance). On the military side were the Defense Civil Preparedness Agency (nuclear attack) and the US Army Corps of Engineers (flood control); however, taking into account the broad range of risks and potential disasters, more than 100 federal agencies were involved in some aspect of risks and disasters.

This pattern continued down to the state and, to a lesser extent, local levels. Parallel organizations and programs added to the confusion and the turf wars that especially occurred during disaster response efforts. The states and the governors grew increasingly frustrated over this fragmentation. In the absence of one clear federal lead agency in emergency management, a group of state civil defense directors led by Lacy Suiter of Tennessee and Erie Jones of Illinois launched an effort through the National Governors Association to consolidate federal emergency management activities into one agency.

With the election of a fellow state governor, President Jimmy Carter of Georgia, the effort gained steam. President Carter came to Washington committed to streamlining all government agencies and seeking more control over key administrative processes. The state directors lobbied the National Governors Association (NGA) and Congress for a consolidation of federal emergency management functions. When the Carter administration proposed such an action, it was met with a receptive audience in the Senate. Congress already had expressed concerns about the lack of a coherent federal policy and the inability of states to know whom to turn to in the event of an emergency.

The federal agencies involved, however, were not as excited about the prospect. A fundamental law of bureaucracy is a continued desire to expand control and authority, not to lose control. In a consolidation of this sort, there would be both losers and winners. There was a question of which federal department/agency should house the new consolidated structure. As the debate continued, the newly organized National Association of State Directors of Emergency Preparedness championed the creation of a new independent organization, an idea that was quickly supported by the Senate.

In the midst of these discussions, an accident occurred at the Three Mile Island nuclear power plant in Pennsylvania, which added impetus to the consolidation effort. This accident brought national media attention to the lack of adequate off-site preparedness around commercial nuclear power plants and the role of the federal government in responding to such an event.

On Jun. 19, 1978, President Carter transmitted to Congress the Reorganization Plan Number 3 (3 CFR 1978, 5 U.S. Code 903). The intent of this plan was to consolidate emergency preparedness, mitigation, and response activities into one federal emergency management organization. The president stated that the plan would establish the Federal Emergency Management Agency (FEMA) and that the FEMA director would report directly to the president.

Reorganization Plan Number 3 transferred to FEMA the National Fire Prevention Control Administration (Department of Commerce), the Federal Insurance Administration (HUD), the Federal Broadcast System (Executive Office of the President), the Defense Civil Preparedness Agency (Department of Defense), the Federal Disaster Assistance Administration (HUD), and the Federal Preparedness Agency (GSA). The following emergency preparedness and mitigation functions were also transferred to FEMA:

- Oversight of the Earthquake Hazards Reduction Program (Office of Science and Technology Policy)
- Coordination of dam safety (Office of Science and Technology Policy)
- Assistance to communities in the development of readiness plans for severe weather-related emergencies
- Coordination of natural and nuclear disaster warning systems
- Coordination of preparedness and planning to reduce the consequences of major terrorist incidents

Reorganization Plan Number 3 articulated the following fundamental organizational principles:

1. Federal authorities who were to anticipate, prepare for, and respond to major civil emergencies should be supervised by one official who is responsible to the president and given attention by other officials at the highest levels.
2. An effective civil defense system requires the most efficient use of all available resources.
3. Whenever possible, emergency responsibilities should be extensions of federal agencies.
4. Federal hazard mitigation activities should be closely linked with emergency preparedness and response functions.

Subsequent to congressional review and concurrence, the Federal Emergency Management Agency was officially established by Executive Order 12127 of Mar. 31, 1979 (44 FR 19367, 3 CFR, Comp., p. 376). A second Executive Order, 12148, mandated the reassignment of agencies, programs, and personnel into the new entity, FEMA.

Creating the new organization made sense, but integrating the diverse programs, operations, policies, and people into a cohesive operation was a much bigger task than realized when the consolidation began. It would take extraordinary leadership and a common vision. The consolidation also created

immediate political problems. By consolidating these programs and the legislation that created them, FEMA would have to answer to 23 committees and subcommittees in Congress with oversight of its programs. Unlike most other federal agencies, it would have no organic legislation to support its operations and no clear champions to look to during the congressional appropriations process.

In addition, President Carter had problems finding a director for this new organization. No large constituent group was identified with emergency management, and at the time the administration was facing major problems with Congress and the public because of the Iranian hostage crisis. President Carter finally reached into his own cabinet and asked John Macy, who was then head of the Office of Personnel Management (OPM), to become director of FEMA.

John Macy's task was to unify an organization that was not only physically separated—parts of the agency were located in five different buildings around Washington—but also philosophically separate. Programs focused on nuclear war preparations were combined with programs focused on a new consciousness of the environment and floodplain management. Macy focused his efforts by emphasizing the similarities between natural hazards preparedness and civil defense by developing a new concept called the Integrated Emergency Management System (IEMS). This system was an all-hazards approach that included direction, control, and warning as functions common to all emergencies from small, isolated events to the ultimate emergency of nuclear attack. For all his good efforts, FEMA continued to operate as individual entities pursuing their own interests and answering to their own congressional bosses. It was a period of few major disasters, so virtually nobody noticed this problem of disjointedness.

Civil Defense Reappears as Nuclear Attack Planning: The 1980s

The early- and mid-1980s saw FEMA facing many challenges, but no significant natural disasters. The absence of the need for a coherent federal response to disasters, as was called for by Congress when it approved the establishment of FEMA, allowed FEMA to continue to exist as an organization of many parts.

In 1982, President Reagan appointed General Louis O. Giuffrida as director of FEMA. Giuffrida, a California friend of Ed Meese, who was one of the President's closest advisors, had a background in training and terrorism preparedness at the state government level. He proceeded to reorganize FEMA consistent with administration policies and his background. Top priority was placed on government preparedness for a nuclear attack. Resources within the agency were realigned, and additional budget authority was sought to enhance and elevate the national security responsibilities of the agency. With no real role for the states in these national security activities, the state directors who had lobbied for the creation of FEMA saw their authority and federal funding declining.

Giuffrida also angered one of the only other visible constituents of the agency — the fire services community. Giuffrida diminished the authority of the US Fire Administration by making it part of FEMA's Directorate of Training and Education. The newly acquired campus at Emmitsburg, Maryland was intended to become the preeminent National Emergency Training Center (NETC).

During Giuffrida's tenure, FEMA faced several unusual challenges that stretched its authority, including asserting FEMA into the lead role for continuity of civilian government in the aftermath of a nuclear attack, managing the federal response to the contamination at Love Canal and Times Beach, Missouri, and the Cuban refugee crisis. Although Giuffrida managed to bring the agency physically together in a new headquarters building in Washington, DC, severe morale problems persisted.

Dislike of Giuffrida's style and questions about FEMA's operations came to the attention of US Representative Al Gore of Tennessee, who then served on the House Science and Technology Committee. As the congressional hearings proceeded, the Department of Justice and a grand jury began investigations of senior political officials at FEMA. These inquiries led to the resignation of Giuffrida and top aides in response to a variety of charges, including misuse of government funds, but the shake-up marked a milestone of sorts: FEMA and emergency management had made it into the comic strip "Doonesbury."

President Reagan then selected General Julius Becton to be director of FEMA. Becton, a retired military general and former director of the Office of Foreign Disaster Assistance in the State Department, is credited uniformly with restoring integrity to the operations and appropriations of the agency. From a policy standpoint, he continued to emphasize the programs of his predecessor,

only in a less visible manner. Becton expanded the duties of FEMA when he was asked by the DOD to take over the program dealing with the off-site cleanup of chemical stockpiles on DOD bases. This program was fraught with problems, and bad feelings existed between the communities and the bases over the funds available to the communities for the cleanup. FEMA had minimal technical expertise to administer this program and was dependent on the DOD and the Army for the funding. This situation led to political problems for the agency and did not lead to significant advancements in local emergency management operations, as promised by the DOD.

At one point in his tenure, Becton ranked the programs in FEMA by level of importance. Of the more than 20 major programs, the earthquake, hurricane, and flood programs ranked near the bottom. This priority seemed logical based on the absence of any significant natural hazards, but this situation is noteworthy in the context that it continued the pattern of isolating resources for national security priorities without recognizing the potential of a major natural disaster.

This issue was raised by then Senator Al Gore in hearings on FEMA's responsibilities as lead agency for the National Earthquake Hazards Reduction Program (NEHRP). Senator Gore, reacting to a scientific report that up to 200,000 casualties could result from an earthquake on the New Madrid fault, believed that FEMA's priorities were misplaced. The legislation that created the NEHRP called on FEMA to develop a plan for how the federal government would respond to a catastrophic earthquake. This Federal Response Plan would later become the standard for all of the federal agencies' response operations. Senator Gore concluded that FEMA needed to spend more time working with its federal, state, and local partners on natural hazards planning.

An Agency in Trouble: 1989–92

As Congress debated, and finally passed, major reform of federal disaster policy as part of the Stewart McKinney–Robert Stafford Act, FEMA's potential and its ability to support a national emergency management system remained in doubt. As the 1980s closed, FEMA was an agency in trouble. It suffered from severe morale problems, disparate leadership, and conflicts with its partners at the state and local levels over agency spending and priorities.

With a new administration in place, President George H. W. Bush named Wallace Stickney as director of FEMA. Stickney was from New Hampshire and was a friend of John Sununu, who was Bush's chief of staff. Stickney came to the director's position having been a staff person at the New England Regional Office of the Environmental Protection Agency and as a volunteer firefighter. His emergency management credentials were minimal, and his selection was poorly received by many of the state directors. At the same time, the political appointees who were named to FEMA's regional director positions—the first line of FEMA's response system—were equally lacking in emergency management experience. These appointments would prove to have dire consequences for both FEMA and the American public.

In 1989, two devastating natural disasters called the continued existence of FEMA into question. In Sep. 1, Hurricane Hugo slammed into North Carolina and South Carolina after first hitting Puerto Rico and the Virgin Islands. It was the worst hurricane in a decade, with more than \$15 billion in damages and 85 deaths. FEMA was slow to respond, waiting for the process to work and for the governors to decide what to do. Less than a month later, the Bay Area of California was rocked by the Loma Prieta earthquake as the 1989 World Series got under way in Oakland Stadium. FEMA was not prepared to deal with the catastrophe.

A few years later, FEMA was not so lucky. In Aug. 1992, Hurricane Andrew struck Florida and Louisiana, and Hurricane Iniki struck Hawaii only a few weeks later. Again, FEMA wasn't ready, but with Hurricane Andrew, it was not only FEMA that failed the people of Florida, but the process and the system as well. Starting with Hurricane Hugo, public concern over natural disasters was high. People wanted, and expected, their government to be there to help in their time of need. FEMA seemed incapable of carrying out the essential government function of emergency management.

In the aftermath of Hurricanes Andrew and Iniki, there were calls for abolishing FEMA. But the incoming Clinton administration realized how important an effective response and quick recovery were to communities and to voters and was determined to fix the emergency management system.

The Witt Revolution: 1993–2001

When President Clinton nominated James Lee Witt to be director of FEMA, Witt breathed new life into FEMA and brought a new style of leadership to the troubled agency. Witt was the first director of FEMA with emergency management experience. He was from the constituency who had played a major role in creating FEMA but had been forgotten—the state directors. With Witt, President Clinton had credibility and, more important, a skilled politician who knew the importance of building partnerships and serving customers.

Witt came in with a mandate to restore the trust of the American people that their government would be there for them during times of crisis. He initiated sweeping reforms inside and outside the agency. Inside FEMA, he reached out to all employees, implemented customer service training, and reorganized the agency to break down bottlenecks. He supported the application of new technologies to the delivery of disaster services and focused on mitigation and risk avoidance. Outside the agency, he strengthened the relationships with state and local emergency managers and built new ones with Congress, within the administration, and with the media. Open communications, both internally and externally, were the hallmarks of the Witt years at FEMA.

Witt's leadership and the changes he made were quickly tested as the nation experienced an unprecedented series of natural disasters. The Midwest floods in 1993 resulted in major disaster declarations in nine states. FEMA's successful response to these floods brought the opportunity to change the focus of post-disaster recovery by initiating the largest voluntary buyout and relocation program to date in an effort to move people out of the floodplain and out of harm's way.

Additional Research

"The Great USA Flood of 1993" (<http://bit.ly/29slbEb>)

Abstract. The 1993 Midwest flood was one of the most significant and damaging natural disasters ever to hit the United States. Damages totaled \$15 billion, 50 people died, hundreds of levees failed, and thousands of people were evacuated, some for months. The flood was unusual in the magnitude of the crests, the number of record crests, the large area impacted, and the length of the time the flood was an issue.

The paper discusses some details of the flood, the forecasting procedures utilized by the National Weather Service, and the precipitation events which caused the flood.

The Northridge, California earthquake quickly followed the Midwest floods in 1993. Northridge tested all of the new streamlined approaches and technology advancements for delivery of services and created some more. Throughout the next several years, FEMA and its state and local partners would

face every possible natural hazard, including killer tornadoes, ice storms, hurricanes, floods, wildfires, and drought.

When President Clinton made Witt a member of his cabinet, the value and importance of emergency management was recognized. Witt used this promotion as an opportunity to lobby the nation's governors to include their state emergency management directors in their cabinets.

The Oklahoma City bombing in Apr. 1995 represented a new phase in the evolution of emergency management. This event, following the first bombing of the World Trade Center in New York City in 1993, raised the issue of America's preparedness for terrorism events. Because emergency management responsibilities are defined by risks and the consequences of those risks, responding to terrorist threats was included. The Oklahoma City bombing tested this thesis and set the stage for interagency disagreements over which agency would be in charge of terrorism.

While this debate continued, FEMA took an important step in its commitment to disaster mitigation by launching a national initiative to promote a new community-based approach called Project Impact: Building Disaster-Resistant Communities. This project was designed to mainstream emergency management and mitigation practices into every community in America. It went back to the roots of emergency management. It asked a community to identify risks and establish a plan to reduce those risks. It asked communities to establish partnerships that included all of the stakeholders in the community, including, for the first time, the business sector.

Additional Research

"Project Impact Initiative to Create Disaster-Resistant Communities Demonstrates Worth in Kansas Years Later" (<http://bit.ly/29OGUv6>). This article documents how preventive measures, taken by communities in Kansas as part of the Project Impact program, saved lives years later when devastating tornadoes struck across Kansas.

By building a disaster-resistant community, the community would promote sustainable economic development, protect and enhance its natural resources, and ensure a better quality of life for its citizens. Fig. 1.1 shows the effects of mitigation during Hurricane Ike. As the decade came to an end, FEMA was still recognized as the preeminent emergency management system in the world. It was adopted in other countries, and Witt became an ambassador for emergency management overseas.



FIGURE 1.1 Gilchrist, Texas, Aug. 16, 2009. These stilt homes were the only structures still standing in the town of Gilchrist after Hurricane Ike destroyed it. FEMA is still working with local, state, and federal agencies to rebuild the town.

Photo by Patsy Lynch/FEMA.

Terrorism: 2001

With the election of President George W. Bush, a new FEMA director, Joe Allbaugh, was named to head the agency. As a former chief of staff to Bush when he was governor of Texas and Bush's campaign manager in the 2000 presidential race, Allbaugh had a close personal relationship with the president. As demonstrated by Witt and Clinton, this was viewed as a positive for the agency. His lack of emergency management background was not an issue during his confirmation hearings.

Allbaugh got off to a rocky start when the administration decided to eliminate funding for the popular Project Impact. Immediately after this decision was announced, the 6.8 magnitude Nisqually earthquake shook Seattle, Washington. Seattle happened to be one of the most successful Project Impact communities. The mayor of Seattle appeared on national television and gave Project Impact credit for the minimal damage from the quake. When then Vice President Dick Cheney was asked why the program was being eliminated, he responded that there had been doubts about its effectiveness. As FEMA's budget proceeded through the appropriations process, Congress put funding back into Project Impact.

As part of the major reorganization of the agency, Allbaugh recreated the Office of National Preparedness (ONP). This office was first established in the 1980s during the Giuffrida reign for planning for World War III and had been eliminated by Witt in 1992. This action raised some concerns among FEMA's constituents and FEMA staff. However, this time the mission of the office was focused on terrorism.

As the events of Sep. 11, 2001 unfolded, FEMA activated the Federal Response Plan, and response operations proceeded as expected in New York and Virginia. The strength of the US Emergency Management System was proven, however, as hundreds of response personnel initiated their operations within just minutes of the onset of events.

The Department of Homeland Security: 2001–05

Almost immediately after the terrorist attacks on the World Trade Center, the President created by executive order the Office of Homeland Security within the White House. The same day that announcement was made, Tom Ridge, the Governor of Pennsylvania, was sworn in to lead the office with the title Assistant to the President.

In Mar. 2002, President Bush signed Homeland Security Presidential Directive-3 (HSPD-3), which stated the following:

The Nation requires a Homeland Security Advisory System to provide a comprehensive and effective means to disseminate information regarding the risk of terrorist acts to federal, state, and local authorities and to the American people. Such a system would provide warnings in the form of a set of graduated “threat conditions” that would increase as the risk of the threat increases. At each threat condition, federal departments and agencies would implement a corresponding set of “protective measures” to further reduce vulnerability or increase response capability during a period of heightened alert.

This system is intended to create a common vocabulary, context, and structure for an ongoing national discussion about the nature of the threats that confront the homeland and the appropriate measures that should be taken in response. It seeks to inform and facilitate decisions appropriate to different levels of government and to private citizens at home and at work.

What resulted was the widely recognizable five-color Homeland Security Advisory System code. On Nov. 25, 2002, President Bush signed into law the Homeland Security Act of 2002 (HS Act) (Public Law 107-296) and announced that Tom Ridge would be appointed Secretary of a new Department of Homeland Security (DHS) to be created through this legislation. This act, which authorized the greatest federal government reorganization since President Harry Truman joined the various branches of the armed forces under the Department of Defense, was charged with a threefold mission of protecting the United States from further terrorist attacks, reducing the nation's vulnerability to terrorism, and minimizing the damage from potential terrorist attacks and natural disasters.

The sweeping reorganization into the new department, which officially opened its doors on Jan. 24, 2003, joined together more than 179,000 federal employees from 22 existing federal agencies under a single, cabinet-level organization. The creation of DHS was the culmination of an evolutionary legislative process that began largely in response to criticism that increased federal intelligence interagency cooperation could have prevented the Sep. 11

terrorist attacks. The White House and Congress both had recognized that a Homeland Security czar would require both a staff and a large budget in order to succeed, and thus began deliberations to create a new cabinet-level department that would fuse many of the security-related agencies dispersed throughout the federal government.

For several months during the second half of 2002, Congress jockeyed between different versions of the Homeland Security bill in an effort to establish legislation that was passable yet effective. Efforts to incorporate many of the intelligence-gathering and investigative law enforcement agencies—the National Security Agency (NSA), the Federal Bureau of Investigation (FBI), and the Central Intelligence Agency (CIA)—into the legislation failed.

Despite these delays and setbacks, after the 2002 midterm elections, the Republican seats gained in both the House and Senate gave the president the legislative leverage needed to pass the bill without further deliberation (H.R., 299-121 on Nov. 13, 2002; Senate, 90-9 on Nov. 19, 2002). Although the passage of this act represented a significant milestone, the implementation phase presented a tremendous challenge—a concern expressed by several leaders from the agencies that were to be absorbed. On Nov. 25, 2002, President Bush submitted his Reorganization Plan (as required by the legislation), which mapped out the schedule, methodology, and budget for the monumental task.

Although a handful of these agencies remained intact after the consolidation, most were fully incorporated into one of four new directorates—Border and Transportation Security (BTS), Information Analysis and Infrastructure Protection (IAIP), Emergency Preparedness and Response (EP&R), and Science and Technology (S&T). A fifth directorate, Management, incorporated parts of the existing administrative and support offices within the merged agencies. Secretary Ridge was given exactly 1 year to develop a comprehensive structural framework for DHS and to name new leadership for all five directorates and other offices created under the legislation.

In addition to the creation of the Department of Homeland Security, the HS Act made several changes to other federal agencies and their programs and created several new programs. On Mar. 1, 2003, Joe Allbaugh, in a memo to FEMA staff, announced that he was resigning as FEMA director. Michael Brown, formerly general counsel to FEMA and acting deputy director, was named as the acting director of FEMA within the DHS Emergency Preparedness and Response directorate. Mike Brown came to FEMA because of his long, personal friendship with Allbaugh. His academic training was in law, and prior to coming to FEMA he had been the executive director of the Arabian Horse Association based in Colorado.

With the DHS establishment moving forward, in 2004 FEMA was faced with four major hurricanes that assaulted Florida. Because of that election year's overall political nature and with Florida being regarded as key in deciding the outcome of the presidential election (as well as the fact that the President's brother Jeb was the Governor of Florida), a great deal of effort was expended to ensure that the federal response to the hurricanes was efficient and effective. However, everyone was well aware that Florida had one of the most effective

state emergency management systems in the country and that it was actually “calling the shots.”

Additional Research

DHS Office of the Inspector General, 2005. Audit of FEMA's Individuals and Households Program in Miami-Dade County, Florida, for Hurricane Frances.

One of the many issues that arose in the aftermath of the hurricanes was the allegation of widespread fraud in the handling of people receiving aid from FEMA even when they had suffered no damages to or loss of their homes. The DHS inspector general, an independent oversight group that investigates government waste, fraud, and abuse of federal programs, investigated the allegations, and this report summarizes their findings.

<http://bit.ly/29qTW12>.

On Nov. 30, 2004, Ridge announced his resignation. On Feb. 16, 2005, Michael Chertoff was unanimously confirmed by the Senate to lead the Department of Homeland Security. On Jul. 13, 2005, Michael Chertoff released a six-point agenda that would be used to guide a reorganization of the department aimed at streamlining its efforts. According to the six-point agenda, the following changes were to be made:

- Increase overall preparedness, particularly for catastrophic events.
- Create better transportation security systems to move people and cargo more securely and efficiently.
- Strengthen border security and interior enforcement and reform immigration processes.
- Enhance information sharing (with partners).
- Improve financial management, human resource development, procurement, and information technology within the department.
- Realign the department’s organization to maximize mission performance.

As part of the proposed reorganization, virtually all of the remaining preparedness capabilities in FEMA, including the US Fire Administration, were moved to the new Office of Preparedness. The exception was the Emergency Management Institute (EMI). Although the EMI training function was always considered part of preparedness, the senior-level FEMA officials argued that its courses supported response and recovery. A new FEMA office was to focus exclusively on response and recovery.

Under the initial DHS organization (Fig. 1.2), the Emergency Preparedness and Response directorate contained most of the pre-DHS FEMA functions and staff. Under the Chertoff reorganization, EP&R was eliminated and the director of FEMA, who was formerly the undersecretary for EP&R, would become an office director. The reorganization was somewhat unclear regarding who would be in charge in a disaster, since the responsibility for the new National Incident Management System (NIMS) was actually vested in the director of Operations

Coordination.

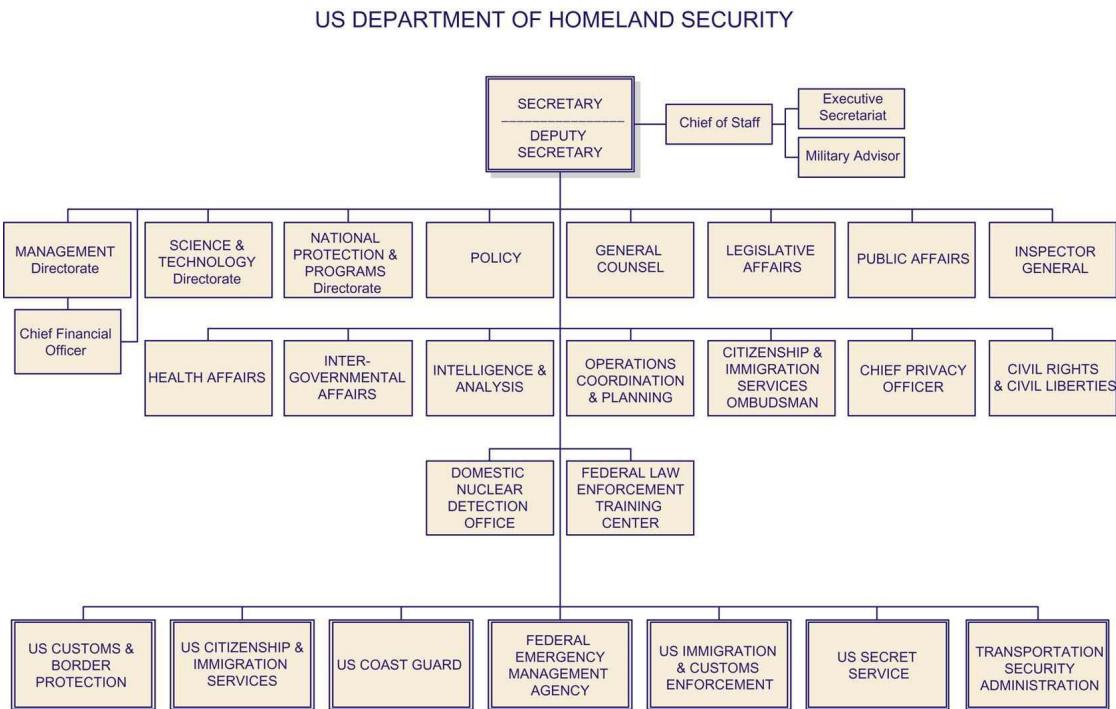


FIGURE 1.2 DHS organizational chart.

Under the Chertoff reorganization, the structure of federal emergency management and disaster assistance functions was returned to pre-FEMA status. The responsibilities and capabilities for mitigation, preparedness, response, and recovery would now be spread out among several entities within the Department of Homeland Security. Policy decisions were exercised to focus most of the human and financial resources on catastrophic threats of bioterrorism and terrorism.

The situation at the time was very similar to the one that existed prior to the creation of FEMA in 1979. Federal emergency management and disaster assistance capabilities were located in numerous federal departments and agencies scattered across the federal government and in the White House. This time, however, instead of being scattered across the federal government, they were scattered within the fledgling Department of Homeland Security. Before this reorganization, FEMA programs were constantly being tasked and taxed to provide financial and human resources to support higher-priority programs in DHS. By taking apart the core programs of FEMA, it became even easier to reassess its resources and diminish its mission within DHS.

The Hurricane Katrina Debacle: 2005

As Secretary Chertoff proceeded with his reorganization, scientists like Max Mayfield (the director of the National Hurricane Center) predicted another active hurricane season. As always, the greatest fear was that a major storm would hit the Gulf Coast, particularly low-lying New Orleans.

Under James Lee Witt, a Category 5 hurricane impacting New Orleans was considered one of the three possible worst-case disaster scenarios. In fact, since the 1980s, FEMA funds had been used to contract multiple evacuation studies of the New Orleans area. In 1995, a national exercise of the Federal Response Plan entitled "Response 95" used a New Orleans hurricane scenario. This particular exercise was never completed because on the first day of play, a major flood event impacted the Gulf Coast (including the site of the exercise play, New Orleans) and abruptly ended the exercise.

Another disaster exercise termed "Hurricane Pam" was convened and completed in Jul. 2004 with appropriate follow-up requirements to correct the problems and deficiencies discovered during the previous exercise. Unfortunately, the funding to support these corrective actions, which had been adequately budgeted by FEMA, became part of a funding reallocation requested of FEMA by DHS management to support other DHS priorities.

The "Senate Report on Katrina" best describes what occurred during those fateful hours and days in late Aug. The specific danger Katrina posed to the Gulf Coast became clear on the afternoon of Friday, Aug. 26, when forecasters at the National Hurricane Center and the National Weather Service saw that the storm was turning west. Phone calls were immediately made to Louisiana emergency management officials, and in their 5 pm EDT Katrina forecast and accompanying briefings, the meteorologists alerted both Louisiana and Mississippi that the track of the storm was expected to shift significantly to the west of its original track to the Florida panhandle. The National Hurricane Center warned that Katrina could be a Category 4 or even 5 by landfall. By the next morning, Weather Service officials confirmed that New Orleans was squarely at risk.

Over the weekend, the drumbeat of warnings continued. FEMA held video teleconferences on both days, discussing the potential dangers of Katrina and especially the risks to New Orleans. Max Mayfield of the Hurricane Center called the governors of the affected states, something he had only done once before in his 33-year career, and President Bush took the unusual step of declaring a disaster in advance of an emergency event for the states in the projected impact zone.

Hurricane Katrina made landfall in Buras, Louisiana, on Monday, Aug. 25, 2005. At the time it was reported as a Category 4 storm when it made landfall. The National Hurricane Center would later downgrade it to a Category 3 storm. In any event, it was considered an extremely dangerous storm by weather forecasters and the National Hurricane Center. It impacted a broad geographic area stretching from Alabama to coastal Mississippi and southeast Louisiana, an

estimated 90,000 square miles. In May 2006, the death toll from the storm was 1856, with another 705 individuals listed as missing ([Fig. 1.3](#)).



FIGURE 1.3 New Orleans, Louisiana, on Sep. 18, 2005. This shows the damages to homes and property in the lower Ninth Ward due to Hurricane Katrina. The markings on these houses were made by the search and rescue teams who looked for survivors after the storm. Searchers wrote the date the house was searched, the time, which search party was involved, any survivors found, and any animals that were still in the house. From Andrea Booher/FEMA.

The storm impacted over 1.5 million people and displaced more than 800,000 citizens. The US Coast Guard rescued over 24,273 people, and FEMA search and rescue teams rescued nearly 6600 persons. Federal government disaster relief expenses were expected to exceed \$100 billion, and the insurance losses

were expected to exceed \$35 billion. The National Flood Insurance Program paid more than \$16.1 million to more than 205,000 people who filed claims related to Katrina. Forty-four states and the District of Columbia received emergency declarations to cover their expenses for sheltering millions of evacuees who had to be transported out of the Gulf.

By any account, Hurricane Katrina was a massive storm, deadly and destructive. It served to expose severe cracks in the nation's emergency management system and its ability to respond to a catastrophic event. Government after-action reports, which are done after most disasters and media accounts, have judged the response a failure, and the recovery phase is considered to show the same level of incompetence. Changes that had been made to Louisiana's coastal landscape, particularly the loss of wetlands and increased channelization, made New Orleans and the Louisiana coast more vulnerable to hurricanes. Design and construction decisions on the levee system and inadequate maintenance of that system contributed to the impacts of Katrina.

The storm challenged the capacities and capabilities of emergency management operations at all levels of government. The lack of planning for the Superdome as the designated shelter of last resort for New Orleans and the subsequent problems that occurred in that facility provided the most visible demonstration of the failed capacities. Many of the problems of the immediate response exposed the impacts of priority focus on terrorism and homeland security in recent years and may have contributed to the decrease in these capacities and capabilities.

Elected officials at all levels of government stumbled badly as they tried to provide leadership in the face of this disaster. The business community, voluntary agencies, and nongovernmental organizations (NGOs) stepped up to provide extraordinary services to storm victims. The general public, corporations, unions, and foundations donated billions of dollars for disaster relief.

Despite the understanding of the Gulf Coast's particular vulnerability to hurricane devastation, officials braced for Katrina with full awareness of critical deficiencies in their plans and gaping holes in their resources. While Katrina's destructive force could not be denied, state and local officials did not marshal enough of the resources at their disposal. In addition to these shortfalls, years of inadequate funding of federal, state, and local emergency functions left them incapable of fully carrying out their missions to protect the public and care for victims.

Additional Research

In the aftermath of Katrina, both houses of Congress held extensive hearings on what went wrong. The Senate report, "The Senate Committee on Homeland Security and Governmental Affairs. 2006. Hurricane Katrina: A Nation Still Unprepared" provides insight into the results of the hearings and deliberations.

<http://bit.ly/29B4wCd>.

More than 1800 people died from Hurricane Katrina, and tens of thousands were displaced and suffered for days in places like the Superdome, on freeway ramps, and on the tops of roofs while waiting to be rescued. Thousands lost their homes and were separated from loved ones. The dislocation, chaos, and desperation that lingered for months after the storm were direct results of the failure of government at all levels to plan, prepare for, and respond aggressively to the storm. Failure can be assessed at all levels, but when President Bush signed the federal declaration of disaster and announced it *before* Katrina even made landfall, the federal government, through DHS/FEMA, assumed the primary responsibility for the stewardship of the response to this storm's aftermath. And by any objective evaluation of the response, it was a colossal failure.

The Steps Leading to the Katrina Debacle

In many respects, FEMA's failures after Katrina were a predictable outgrowth of steps that were taken in the aftermath of Sep. 11. FEMA lost its status as an independent agency—and its direct access to the president—when it was absorbed into the newly created Department of Homeland Security (DHS). The director of FEMA was no longer on the same level as the cabinet secretaries whom FEMA had to task and direct during disasters. At the state level, many states created their own offices of homeland security that subsumed emergency management or were competitive structures, further complicating emergency response organization.

FEMA personnel and funds, including money for preparedness and mitigation intended for state and local agencies, were redistributed to support other higher priorities within DHS. The result of these actions was that the agency was even further hollowed out. The federal response plan was restructured into the National Response Plan to accommodate the new DHS arrangements and the operational oversight role of the department's secretary. A new level of bureaucracy was added with the creation of the principal federal officer (PFO) as the new coordinator in a disaster. Where previously the director of FEMA had maintained a clear line of authority and accountability, the existence of a new PFO created confusion over who would be in charge in a disaster. As a result, the necessary civilian and military assets were not deployed to facilitate the evacuations and provide supplies to the evacuation shelters before Katrina hit.

FEMA also failed to work with the governors on how to use the National Guard. Another factor in the post-Katrina fiasco was the dramatic post-9/11 change from a focus on “all-hazards” management—in which responders prepare for calamities according to plans that apply regardless of their precise nature—to a focus on terrorism that led to significantly weakened national capabilities. At all levels of government, approximately 75% of available resources for emergency management activities were applied to terrorism. Preparing, mitigating, or responding to natural disasters like floods, tornadoes, or hurricanes, was subordinated to a narrow, if understandable, focus on terrorism. That reprioritization depleted the capabilities to respond to disasters at all levels of government.

Post-Katrina Changes

In the rush to examine and investigate what went wrong and to take corrective actions, both the House of Representatives and the Senate engaged in extensive hearings and investigations. The White House dispatched Frances Townsend, assistant to the president for Homeland Security, to conduct a thorough review of what went wrong and to generate corrective recommendations.

Additional Research

The Bush administration's report, "The Federal Response to Hurricane Katrina: Lessons Learned" (<http://bit.ly/29HqiFL>) was released in Feb. 2006. It was a weighty document and included 125 recommendations and 11 critical actions that needed to be completed by Jun. 1, the start of the 2006 hurricane season. Most of its recommendations have still not been implemented, but it remains a unique assessment of the federal government's role in disaster relief as far as the Bush administration was concerned.

These organizational and leadership issues were not easily swept under the rug. Senators Clinton and Mikulski introduced legislation to restore FEMA to its independent status and make the director's position a cabinet post. This legislation went nowhere. Powerful forces on the Senate Committee on Homeland Security blocked these efforts, particularly Senator Joe Lieberman, who had been instrumental in the DHS's creation and clearly did not want his creation tampered with. Lieberman was joined by Republican Committee Chair Susan Collins, who would not even consider moving FEMA out.

The 109th Congress, in response to hearings and reports, passed legislation that revised federal emergency management policies that vested more power in the president, reorganized FEMA, and enhanced and clarified the mission, functions, and authorities of both the agency and its parent organization, DHS.

Six statutes enacted by the 109th Congress are notable in that they contain changes that apply to future federal emergency management actions. These public laws include the following:

- The Post-Katrina Emergency Management Reform Act of 2006
- The Security and Accountability for Every Port Act of 2005, known as the SAFE Port Act
- The Pets Evacuation and Transportation Standards Act of 2006
- The Federal Judiciary Emergency Special Sessions Act of 2005
- The Student Grant Hurricane and Disaster Relief Act
- The John Warner National Defense Authorization Act for Fiscal Year 2007

Most of these statutes contain relatively few actual changes to federal authorities related to emergencies and disasters. The Post-Katrina Emergency Management Reform Act of 2006 (commonly known as PKEMRA), however, contains many changes that have long-term consequences for FEMA and other

federal entities. That statute reorganizes FEMA, expands its statutory authority, and imposes new conditions and requirements on the operations of the agency. In addition to the public laws just listed, Congress enacted supplemental appropriations, one-time waivers of requirements, and temporary extensions solely associated with Hurricanes Katrina, Rita, and Wilma.

Additional Research

The Congressional Research Service's publication "Federal Emergency Management Policy Changes after Hurricane Katrina—A Summary of Statutory Provisions" is an excellent report that identifies the requirements and changes for FEMA, DHS, and federal emergency management policies and programs under PKEMRA.

<http://bit.ly/29qUBzN>.

In summary, PKEMRA requires that DHS reconsolidate all of the emergency management functions (including preparedness) into FEMA, elevates the status of FEMA within the department, protects the FEMA assets from reassignment within DHS, and gives FEMA enhanced organizational autonomy. In addition, the act provides for FEMA to maintain ten regional offices. It adds to FEMA a National Advisory Council, Regional Advisory Councils, a disability coordinator, a small state and rural advocate, and regional strike teams. They provide autonomy for the FEMA administrator (formerly director) to communicate directly with Congress.

After Mike Brown resigned (or was terminated), David Paulison became FEMA administrator. Paulison had served as US Fire Administrator and had a long and distinguished career in the fire service in Florida. His elevation to the top position was well received by the fire service constituencies, who had long felt that they had not received their due within FEMA and the emergency management community. Harve Johnson, a former admiral in the Coast Guard, was appointed deputy administrator.

The new leadership came with the firm mandate to prevent another Katrina. To do so, FEMA leadership took a very different approach to the emergency management partnership with both state and locals. FEMA instituted the "new FEMA" – a top-down approach in which federal requirements for response planning and operations were imposed on state and local emergency management operations as a condition of receiving federal resources.

The Integrated Planning System that was created included different planning parameters than those used by state and local emergency planners in their certifications. State and local compliance with the National Information Management System (NIMS) was made a condition for continued funding. The old system in which the federal government supplemented state and local efforts and worked in partnership was replaced by a system where in a major disaster the federal government took charge and supplanted state and local authorities. To support this change, FEMA was able to substantially increase its staff in both its headquarters and the regions, and many of the new senior

managers who were hired came from organizations such as the Coast Guard and the military, where federal supremacy and authority were the normal operational parameters.

At the direction of DHS leadership, at the federal level, FEMA concentrated on remaking the National Response Plan into a National Response Framework (NRF) that blurred the lines of responsibility among the federal partners in responding to disasters. Under the new NRF, DHS/FEMA assumed many more responsibilities such as acting as the lead federal agency for Mass Care, an Emergency Support Function (ESF) previously led by the American Red Cross (ARC). On the other hand, DHS/FEMA used the PKEMRA requirements to deflect problem areas such as post-disaster housings.

PKEMRA called for a new strategy for disaster housing, and FEMA engaged other federal agencies, specifically the Department of Housing and Urban Development (HUD), in development of this strategy and taking on a major role in providing post-disaster housing. This change in responsibility was piloted during the Texas disasters of 2008 to mixed results. A more complete discussion of this follows in later chapters of the text. Although the new FEMA was never really tested, problems persisted. Major portions of the Katrina recovery continued to languish, especially in New Orleans; the morale in FEMA was at an all-time low; and a federal, state, and local partnership on emergency management still did not exist.

Critical Thinking

What do you think could have been done in the years preceding Hurricane Katrina to better prepare the states to deal with this kind of event? Do you think that this event was so large that only a federal response could have managed it? Explain your answer.

The Obama Administration's Approach to Emergency Management

Emergency management issues did not play a prominent role in the presidential election of 2008. The issue of the failed response to Katrina and the slow recovery were certainly a part of the campaign dialog, and both presidential nominees visited New Orleans and vowed to speed up the recovery. Barack Obama's election represented a change from the past, including a change for emergency management. Although Obama's administration discussed removing FEMA from DHS and returning it to its former position as an independent agency, this was not to be. Janet Napolitano, Secretary of DHS, strongly believed that FEMA was an essential part of DHS. She was committed to finding the right administrator for FEMA and chose W. Craig Fugate, former state director of Emergency Management from Florida (Fig. 1.4). Fugate brought excellent credentials and extensive operational experience to the position. Florida was one of the premier state emergency management organizations in the United States, and although Fugate had been a strong proponent of moving FEMA out of DHS, he accepted the position and was easily confirmed by the Senate.



FIGURE 1.4 Washington, DC, Sep. 29, 2009—FEMA Administrator, W. Craig Fugate, addresses the audience at the American Red Cross Headquarters prior to DHS Secretary, Janet Napolitano's speech on the nation's responsibility for preparedness and the resilience of the American people. Barry Bahler/DHS.

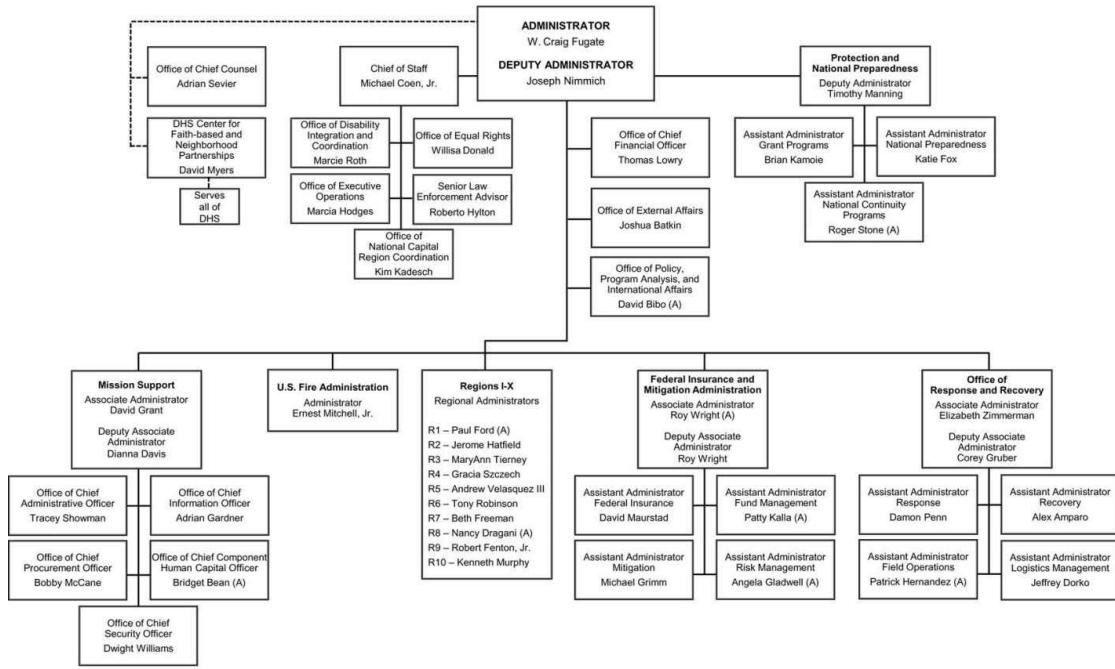
At his confirmation hearing and in subsequent speeches, Fugate has said that

he wants to make a culture of preparedness—especially personal preparedness—a hallmark of his FEMA tenure. As a result, he has changed the vocabulary of disasters, referring to individuals impacted by disasters as “survivors” instead of “victims.”

His team, illustrated by the current FEMA organizational chart ([Fig. 1.5](#)), includes several veterans of the 1990s Witt years, and he strongly supports rebuilding the partnership with state and local emergency management organizations. His ability to rebuild FEMA into a strong, well-managed, and responsive organization, however, was not immediately tested. The 2009 hurricane season was one of the calmest in decades, and the H1N1 flu outbreak was addressed, so Fugate’s agency had not yet responded to a major disaster. The Agency reorganization included a consolidation of the response-and-recovery functions under a single directorate led by Bill Carwile, an ex-federal coordinating officer with substantial response experience.



U.S. Department of Homeland Security/FEMA



June 28, 2016

FIGURE 1.5 FEMA organizational chart Jun. 28, 2016. FEMA. 2016. FEMA Organizational Chart. <http://bit.ly/2f7xn0O>.

As Fugate settled into the position his intentions to concentrate on building an effective response organization and promoting individual and community preparedness became more evident. Although a strong supporter of mitigation while in Florida, Fugate has expressed concerns about the feasibility about the NFIP, whose floodplain management requirements in exchange for subsidized insurance coverage remain a primary implementing program for community mitigation. He inherited an NFIP program that was in a very poor financial condition as a result of claims from Hurricanes Katrina and Rita, and a series of floods that required the National Flood Insurance Fund to borrow significant funds from the US Treasury to meet its claims obligations. Since Congress has limited the ability of the NFIP to raise rates that would make the program actuarially sound, it will take approximately 10 years to repay its loans and be financially sound again.

As Administrator Fugate and his team sought to re-energize the Agency, they have chosen to strategically focus on the following areas:

- Improving the response operations
- Incorporating all elements of social media—Facebook, Twitter, blogs, etc.—to communicate with the public before, during, and after disasters
- Promoting their signature program concept of a Whole Community approach to emergency management.
- Limiting FEMA's leadership role in long-term recovery and mitigation

Each of these issues will be discussed at length in the following chapters of the textbook. However, it is worth looking at the Whole Community approach as it reveals a fundamental change in previous approaches to emergency management which transfers considerable responsibility for community safety decisions.

In the FEMA document entitled “A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action (FDOC 104-008-1/December 2011)” (<http://bit.ly/29Cj6IV>), FEMA released its concept for applying a Whole Community approach to emergency management. In this document, the Whole Community approach is defined as:

As a concept, Whole Community is a means by which residents, emergency management practitioners, organizational and community leaders, and government officials can collectively understand and assess the needs of their respective communities and determine the best ways to organize and strengthen their assets, capacities, and interests. By doing so, a more effective path to societal security and resilience is built. In a sense, Whole Community is a philosophical approach on how to think about conducting emergency management.

There are many different kinds of communities, including communities of place, interest, belief, and circumstance, which can exist both geographically and virtually (e.g., online forums). A Whole Community approach attempts to engage the full capacity of the private and nonprofit sectors, including businesses, faith-based and disability organizations, and the general public, in conjunction with the participation of local, tribal, state, territorial, and Federal governmental partners.

This engagement means different things to different groups. In an all-hazards environment, individuals and institutions will make different decisions on how to prepare for and respond to threats and hazards; therefore, a community's level of preparedness will vary. The challenge for those engaged in emergency management is to understand how to work with the diversity of groups and organizations and the policies and practices that emerge from them in an effort to improve the ability of local residents to prevent, protect against, mitigate, respond to, and recover from any type of threat or hazard effectively.

Whole Community Is a Philosophical Approach in How to Conduct the Business of Emergency Management

Benefits include:

- Shared understanding of community needs and capabilities
- Greater empowerment and integration of resources from across the community
- Stronger social infrastructure
- Establishment of relationships that facilitate more effective prevention, protection, mitigation, response, and recovery activities
- Increased individual and collective preparedness
- Greater resiliency at both the community and national levels

One other aspect of the Whole Community concept is to recognize the unique, functional needs of several sections of the population. In support of this, FEMA had produced a video that describes their outreach approach to various organizations.

After a slow start in terms of major disasters, the Agency has certainly been tested in recent years. The Joplin tornadoes, wildfires, and finally Hurricane Sandy, have put FEMA back under the spotlight.

By all accounts, FEMA fared well in Joplin. FEMA had been conducting disaster response and recovery in Missouri in the months prior to the Joplin tornado. Severe winter storms in Jan. and Feb. 2011 led President Barack Obama to issue a major disaster declaration (FEMA-DR-1961) for 59 counties throughout the state on Mar. 23, 2011. FEMA Administrator Craig Fugate appointed Libby Turner as FCO, and a JFO was established in Columbia, Missouri. Several weeks later, spring storms brought damaging tornadoes and flooding to Missouri, principally in the southern tier. On May 9, 2011, President Obama issued a major disaster declaration (FEMA-DR-1980) for five counties. Administrator Fugate appointed Turner as the FCO for DR-1980, with the JFO continuing to operate from its offices in Columbia.

On the evening of May 22, 2011, shortly after the tornado, FEMA Headquarters, Region VII Administrator Freeman and FCO Turner had a series of telephone calls to discuss how FEMA could support response operations in Joplin. The State of Missouri had the option to request that the Joplin event be added to DR-1980 or it could have requested that the president issue a new disaster declaration. Administrator Fugate issued an amendment to DR-1980 on May 23, 2011, which provided Individual Assistance, debris removal, and emergency protective measures funding to individuals in Jasper and Newton counties. The Joplin tornado response offers an opportunity to identify Whole Community contributions and solutions to a catastrophic incident. The State of Missouri had not suffered from a disaster of this magnitude or anything approaching it for at least a decade. Similarly, the city of Joplin had suffered

from severe weather, but nothing approaching this magnitude. The Joplin tornado, as the single most deadly tornado in the United States in over half a century, overwhelmed the capabilities of the city of Joplin and Jasper County. However, as the following preliminary findings demonstrate, the Whole Community responded to Joplin and Jasper County in their hour of need. This only transpired because of the preparedness partnerships that had been developed among federal, state, local, private sector, voluntary, and non-profit entities.

Additional Research

Joplin: One Year Later, the White House
<http://bit.ly/29GCI4I>.

In Oct. of 2012, a major hurricane took aim on the East Coast. Unlike the Joplin tornadoes, Hurricane Sandy was a different type of storm dealing with different circumstances, impacting a larger geographic area from the Carolinas up through the entire East Coast with major population centers affected and very different cultures from the Midwest. In general, FEMA received high praise for its response, which is not surprising as that is what the Agency had focused on since 2008. With the exception of areas in Staten Island, NY and some areas of Brooklyn, NY, FEMA has done an excellent job with the initial response, supported by very strong state and local emergency response personnel at the state and local level in New York, New Jersey, and Connecticut. Hard hit areas in North Carolina and other less politically active states have not felt the same level of support. When Mitt Romney, the 2012 Republican Presidential candidate made the mistake of criticizing the Obama Administration for the Sandy response, he was given a redressing by Republican Governor Chris Christie of New Jersey, who praised the Obama Administration's efforts. But as of the writing of this book, the hard part is just beginning. Temporary housing solutions for millions of displaced residents is a major issue in New York and New Jersey. Insurance claims are slow in coming and major infrastructure issues will need to be addressed (Fig. 1.6).



FIGURE 1.6 Breezy Point, N.Y., Nov. 1, 2012—A large American flag flies in the midst of more than 100 residences burned in the Breezy Point community of the Rockaways adjacent to New York City. A gas leak that occurred during the height of Hurricane Sandy erupted into a firestorm that was difficult for fire fighters to control. Walt Jennings/FEMA.

Of major significance, President Obama assigned Secretary Shaun Donovan, Secretary of Housing and Urban Development (HUD) to be in charge of Sandy Recovery—not Administrator Fugate, nor Secretary Napolitano. This is a clear indication that FEMA may be out of the recovery business except to foot the bill through its Disaster Relief Fund programs. In fact, the first monies released to the communities to rebuild were funding through HUD's Community Development Block Grant Program (CDBG). CDBG funding is one of the few Federal monies that is allowed to be used to meet Federal matching requirements. At the same time, arguments in Congress over a Disaster Relief supplemental that would cover the billions of dollars anticipated for Sandy repair were being bogged down in discussions of the federal deficit, whether the supplemental had to be offset by other federal budget dollars (which had never happened before) and political maneuverings. In the end, the strength and loudness of the New York and New Jersey delegations persevered and a non-offset supplemental was approved.

Sandy was the first large-scale disaster to completely apply the new National Disaster Recovery Framework (NDRF) and has resulted in a host of issues that will need to be addressed. While the NDRF is built on a solid groundwork of agency cooperation, there is nothing that requires agencies to comply or even cooperate with, and the coordination of assets has not been forthcoming. This could be a result of the economic situation agencies are facing because of the Congressionally mandated sequester of an across-the-board 5 percent reduction

on federal funds. However, the NDRF, unlike previous plans where agencies signed on the dotted line to commit their resources (to later be reimbursed by FEMA through the DRF), has no such commitment in the framework. The ambitious goals of the NDRF will get a true testing as local communities and states face long-term recovery decisions. Another major issue, which will be tested, is how these communities will rebuild. Without an advocate for long-term mitigation strategies to be incorporated into the rebuilding—a position FEMA once held—pressures are already building to use structural solutions along the New Jersey shore to rebuild beaches that will erode even more quickly in the future and impact communities for years to come. FEMA's abdication on promoting mitigation issues that will reduce future impacts has left a void that the Army Corps of Engineers may be only too happy to fill. Many of these issues will be discussed in greater detail in later chapters.

Post-Sandy legislation has been copious. [Table 1.1](#) provides an analysis done by the Congressional Research Service (CRS) that focuses on changes to the Stafford Act that would expedite delivery of aid to states and communities through the DRF as well as simplifying procedures for historical preservation and environmental reviews. A complete copy of the report can be accessed at <http://bit.ly/29qVAzE>.

Table 1.1

Congressional Research Service Analysis of Stafford Act Amendment

This report analyzes the provisions of the Sandy Recovery Improvement Act of 2013. In general, these provisions amend the Stafford Act with a stated goal of improving the efficiency and quality of disaster assistance provided by FEMA. Briefly, the amendments to the Stafford Act include:

Establishing a new set of alternative procedures for administering the Public Assistance Program, which provides assistance for debris removal and the repair and restoration of eligible facilities (Section 1102 of the Sandy Recovery Improvement Act of 2013);

Authorizing FEMA to enter into agreements with private owners of multi-family rental properties to expand post-disaster housing resources (Section 1103);

Revising the administration of the Hazard Mitigation Grant Program, to include a possible advancement of 25% of grant funds (Section 1104);

Directing the establishment of alternative dispute resolution procedures (including binding arbitration), building on FEMA's current appeals process, to resolve federal and state disagreements on costs and eligibility questions (Section 1105);

Directing the creation of a joint process for environmental and historical review for disaster recovery projects with the goal of

increasing the speed of the process (Section 1106);
Directing FEMA to study, and report to Congress, whether it is appropriate to increase the dollar size of “small projects” eligible for simplified procedures (Section 1107);
Including childcare as an eligible expense under the “other needs assistance” provided in certain disasters (Section 1108(a));
Specifically authorizing the reimbursement of the base wages of government employees providing emergency work under certain circumstances (Section 1108(b));
Directing FEMA to update the factors considered when assessing the need for Individual Assistance in the declaration process (Section 1109);
Authorizing the chief executive of a tribal government to directly request disaster or emergency declarations from the President, much as a governor can for a state (Section 1110); and
Directing FEMA to create a comprehensive national strategy for reducing the cost of future disasters (Section 1111).

Prospectively, the changes in law apply to disasters declared on or after the date of enactment, Jan. 29, 2013.

One final area of history to note: FEMA played virtually no role in the aftermath of the Boston Marathon bombings in 2013. This is in dramatic contrast to the role FEMA played in the World Trade Center bombing in 1993, the Oklahoma City bombing, and the 2011 World Trade Center event. In each case, it was understandably and primarily a crime scene event. However, FEMA assisted in communications, search and rescue, individual assistance and, most importantly, providing a reassuring presence that the government was there to help the victims and their families. This was visibly missing from the Boston events. The concept of emergency management as an all-hazards agency whose mission is to help people in their time of need clearly no longer exists.

By all appearances, leadership at FEMA and DHS are slowly achieving their goal of being a preparedness and response organization, leaving the difficult decisions of recovery and building back better to some other federal entity—right now it looks most likely to be HUD. This is an interesting turn, since many of these programs were taken out of HUD because they couldn’t execute them and didn’t have the connections at the state level to make them work. However, in the aftermath of Hurricane Sandy, which was the first time FEMA and its federal partners actually applied the NDRF, President Obama chose to name Secretary of HUD, Shaun Donovan, as the individual in charge of the long-term recovery from Hurricane Sandy for the Northeast Coast. This may be the pattern that we will see in the future, i.e., the person in charge of long-term recovery may be the Cabinet Secretary closest to the President or with a special

relationship to the area of the disaster. While this may be logical, it can also be confusing to the state directors of emergency management as they will not have the same established working relationship with most of the Cabinet as they traditionally have with the Administrator of FEMA.

FEMA and Social Media

It is important to recognize the critical role social media has played in FEMA's response and other program operations. Under the leadership of Administrator Fugate, FEMA has been on the leading edge of utilizing media outlets from Twitter to Facebook to YouTube. During the response to Sandy and throughout the recovery period, FEMA provided a constant stream of communications. Administrator Fugate tweeted regularly, and the agency used YouTube and Facebook to show how the response and recovery operations were proceeding. Under Fugate's leadership, FEMA showed that the Federal government recognized the importance of communication with its citizens during a disaster and in the aftermath. But FEMA went a step further when in testimony before a Senate Committee looking into the Sandy aftermath Administrator Fugate stated that:

We value two-way communication not only because it allows us to send important disaster-related information to the people who need it, but also because it allows us to incorporate critical updates from the individuals who experience the on-the-ground reality of a disaster. The exigent nature of emergency management makes time a critical resource. The sooner we are able to comprehend the full scope of the disaster, the better able we are to support our citizens and first responders. For that reason, we must seek out and incorporate information provided by the public.

This represented a dramatic and very positive step in the evolution of emergency management. The adoption of new technologies and an openness to application of these new approaches for mitigation, preparedness, response and recovery has been critical to setting the course forward towards a more efficient and effective emergency management future.

The Strategic Foresight Initiative

As the Obama Administration's second term commenced, FEMA had begun to develop a new program called the *Strategic Foresight Initiative* or SFI. The purpose of SFI was to advance strategic planning and to encourage thinking about what the future may present. Administrator Fugate posited that SFI will result in "an emergency management community that is better positioned and prepared for whatever challenges and opportunities the future holds."

The goals of the SFI are as follows:

1. Advancing knowledge of future trends and drivers through environmental scanning, trend analysis, forums, collaboration and interaction with interdisciplinary networks.
2. Improving FEMA decision-making by the active use and promotion of foresight in FEMA decision-making.
3. Application of foresight through the identification and implementation of foresight.
4. Foresight tools that provide information and promote the implementation of foresight across the whole community

In implementing this initiative, FEMA held numerous workshops and collaborated with over 2000 subject matter experts and engaged community leaders across the United States and internationally in places like Australia and Canada. In incorporating this initiative to the whole community concept that was championed by Administrator Fugate early in his tenure at FEMA, the concepts of community resilience found a broader forum to engage all parts of a community. This initiative formed the basis for the 2014–18 FEMA Strategic Plan, which can be found at: <http://bit.ly/2flp2ar>.

Aftermath of Sandy and an Insurance Scandal

While FEMA received positive reviews for its response to Sandy, as noted earlier, the recovery proved more difficult. Three years after the storm hit, an investigation by Public Television's Frontline program alleged that thousands of homeowners who had flood insurance through the National Flood Insurance (NFIP) had been shortchanged on their claims. Congressional hearings soon followed, and in 2015 FEMA launched its own review and found that three out of five of the 17,000 policyholders filing claims were entitled to more money. Over 2000 lawsuits were filed against FEMA and the NFIP. Although FEMA administers the NFIP, private sector insurance companies handle policy sales and servicing of claims. It appeared that at least two of the engineering firms used to perform damage assessments on homes were rewriting the estimates when reports were received from field assessors. Based on the FEMA review, these firms offered each policyholder an opportunity to submit their claims for review. To date, FEMA has expended \$8.1 million to approximately 140,000 policyholders covered by the NFIP.

Source: <http://bit.ly/29qWlbX>

This is not the first time the NFIP has faced significant problems. Moreover, the program has been in arrears to the Federal treasury for years. Major reforms are needed, some of which are being undertaken by FEMA. Unfortunately, most of the original NFIP staff at FEMA who possessed the extensive knowledge and experience that were required to successfully administer the program have since left, and many of the political appointees who were traditionally drawn from the insurance industry are likewise no longer being appointed. It is perhaps time for the current or subsequent administration to consider moving the NFIP program to another Agency where it will receive the oversight and innovation it requires.

Administrator Fugate has taken a very positive step towards providing the means of improvement for communities impacted by major disasters. FEMA has issued a proposed rulemaking that would require any damaged facilities eligible under the Public Assistance program to be repaired using the most recent version of the International Building Code (IBC). These upgrades would be eligible for FEMA reimbursement, which was not the case in the past. Administrator Fugate has long been a proponent of application of building codes. There are some minor questions as to whether the disaster legislation must be amended to accommodate this change, but that will be a matter of interpretation. One can find precedent for this action in the recovery launched following the Northridge earthquake wherein FEMA supported the upgrade of certain critical facilities (including hospitals) to higher levels of code protection. Again, this rule represents a very positive sign that FEMA is returning to its earlier emphasis on mitigation—a function that has been downplayed in recent years.

Conclusion

The history of disasters and of efforts to manage their risk influence all aspects of emergency management, as are discussed in all ten chapters of this book. However, in [Chapter 10](#), we will again explore the historical context in greater detail in order to better explain how recent actions and policies stand to influence the future of emergency management. This final chapter will also discuss in more definitive terms several of the different trends that are pointing to a more viable, proactive emergency management discipline (as opposed to one that is reactive and which changes only in response to major events or disasters.) Finally, as in previous editions of this textbook, the authors will speculate on what the future may hold for the discipline based on a combined experience of over 100 years in the in emergency management profession.

Important Terms

Civil defense
Department of Homeland Security
Emergency management
Federal Emergency Management Agency
National Disaster Recovery Framework

Self-Check Questions

1. What are some of the first examples of emergency management?
2. According to the Constitution, does the federal government have a primary or secondary role in managing public risks?
3. What is the significance of the Flood Control Act of 1936?
4. How did the Cold War era contribute to the evolution of modern emergency management?
5. What disaster led to the creation of the National Flood Insurance Program?
6. Describe the events of the 1970s that led to the creation of FEMA.
7. Why was FEMA an agency in trouble at the close of the 1980s?
8. How did James Lee Witt improve FEMA?
9. What changes did the creation of the Department of Homeland Security bring about for the federal emergency management capacity?
10. List the steps involved in the creation of the Department of Homeland Security.
11. Why was the response to Hurricane Katrina so ineffective?
12. How did the poor response to the Hurricane Katrina disaster change emergency management in the United States?
13. What area of emergency management did DHS/FEMA seek to emphasize in 2009?
14. What impact has Hurricane Sandy had on FEMA's responsibilities and changes to the DRF?
15. How relevant is social media in disaster response and recovery?

Out-of-Class Exercises

Based on your knowledge of how emergency management has evolved at the community and state level, recommend the most appropriate organizations at each level to have responsibility for mitigation. Pick a community and consider how you would apply the Whole Community concept to that community. Do you think we still need a FEMA or can these responsibilities be devolved to the state?

Natural and Technological Hazards and Risk Assessment

Abstract

This chapter discusses the full range of existing hazards, both natural and technological, and the methods by which associated hazard risk may be assessed. For each hazard, a brief description of the hazard and its effects is provided, as well as information on hazard detection and classification.

Keywords

Natural hazard; technological hazard; intentional hazard; risk; vulnerability; CBRN weapon; terrorism; hazards risk management

WHAT YOU WILL LEARN

- Natural and technological hazards that often result in emergencies and disasters
- Scales and systems used to measure the strength of hazards and the magnitude of disasters
- The terrorist threat, including weapons of mass destruction
- How hazards are identified and risks are assessed
- The influence of social and economic factors on community risk

Introduction

A *hazard* is defined as a “source of danger that may or may not lead to an emergency or disaster” (National Governors Association, 1982), and it is named after the emergency or disaster that could be so precipitated. Each hazard carries an associated *risk*, which is represented by the likelihood of the hazard leading to an actual disaster event and the consequences of that event should it occur. The product of realized hazard risk is an event or an emergency, which is typically characterized as a situation exhibiting negative consequences that require the efforts of one or more of the emergency services (fire, police, EMS, public health, or others) to manage. When the response requirements of an event or an emergency exceed the capabilities of those established emergency services in one or more critical areas (e.g., shelter, fire suppression, mass-care), for a particular local government or even for a region, the event is classified as a *disaster*. And ultimately, when the response requirements in one or more critical areas of assistance are unable to be met at all levels of government responding, the incident is classified as a catastrophe (catastrophes are measured only at the national level or greater) ([Fig. 2.1](#)).



FIGURE 2.1 Long Beach, N.Y., Nov. 8, 2012—Aerial views of Hurricane Sandy damage to homes on Long Beach, New York. Following the hurricane, a nor'easter struck the area causing more power outages and additional flooding. FEMA is working with state and local officials to assist residents who were affected by Hurricane Sandy. Andrea Booher/FEMA.

Hazard identification is the foundation of all emergency and risk management activities. When hazards interface with the human or built environments, it is risk that is the result. For each risk, there exists an associated likelihood that an actual event will occur, and a measure of expected consequences. It is accurate knowledge about risk posed by identified hazards that most effectively guides preparedness, planning, and mitigation processes. And it is the realization of this risk, such as occurs when earthquakes, tornados, floods, or other hazards strike, that requires the many different emergency response and recovery stakeholders to act upon their plans and draw upon their capabilities and resources. For the contemporary emergency manager, faced with a diverse portfolio of hazards and a finite budget with which to manage them, effectiveness and efficiency is fully predicated on the accurate and effective hazard identification and risk assessment.

This chapter discusses the most common disaster-triggering hazards, both natural and technological, and presents common methods by which risk from these hazards may be assessed. A brief description is provided for each hazard, as are the common effects and information about detection and classification.

Natural Hazards

Natural hazards are sources of risk exposure that derive from the natural environment as a result of hydrological, meteorological, seismic, geologic, volcanic, mass movement, or other natural processes. They are a threat because the energy they exert poses a threat to human and animal populations, agriculture, physical structures (including infrastructure), or the social and economic functioning of communities. Both the likelihood and consequence factors of natural hazard risk are often exacerbated by human activities, including such things as development, settlement patterns, modification of the landscape, emissions of carbon gases, and other actions. For example, the construction of communities in the floodplain or on barrier islands almost always increases risk associated with hurricane-force winds, flooding, and storm surge. When structures are constructed on or around seismic faults, the likelihood that they will be destroyed in a future earthquake event is greatly increased. Even earthquakes themselves have been attributed to human activities, predominantly the use of deep wastewater disposal and hydraulic fracturing (fracking) in the oil and gas industry ([Rubinstein and Mahani, 2015](#)). By increasing our understanding of natural hazards and the processes by which they affect us, societies can more appropriately plan for these stressors and reduce vulnerability (see [Chapter 3: The Disciplines of Emergency Management](#): Mitigation examines how humans can better live with hazards).

Floods

A flood is an overabundance of water that engulfs land and other property that is normally-dry. There are a number of different reasons floods occur, including sustained or heavy rainfall, melting snow, obstruction of a natural waterways (e.g., by beavers, ice, debris, or landslides), among other generative factors. Major floods affecting wide geographic areas are typically the result of large-scale weather systems capable of generating prolonged rainfall and onshore winds (in the case of coastal flooding), but events of equally significant magnitude can occur in much less time following intense thunderstorms with exceptionally heavy precipitation rates or dam failures, for example. Floods are capable of undermining buildings and bridges, eroding shorelines and riverbanks, tearing out trees, washing out access routes, and causing loss of life and injuries. Flash floods, which can reach full peak in only a few minutes, are a distinct category of flood characterized by the lack of warning that is possible given their rapid generation ([Fig. 2.2](#)).



FIGURE 2.2 Quechee, Vt., Sep. 11, 2011—The Quechee bridge is a main thoroughfare and an integral part of the town. Residents cried as they watched their beloved bridge battered by flash flood waters caused by tropical storm Irene. Photo by Wendell A. Davis Jr/FEMA.

Floods are the most frequent and widespread disaster in many countries around the world, including the United States, due to the prevalence of human development along coasts and in the floodplain. Between 2010 and 2015, all fifty states experienced floods or flash floods (FEMA, 2016). The close relationship between societies and water is primarily the result of commerce (the transportation of goods has most commonly been conducted by water), agriculture, fishing, and access to drinking water. And as global populations continue to grow and urbanize, so does exposure to flood events. The US Army Corps of Engineers estimate that 94 million acres of US land, which represents about 7% of the total land area and 15% of urban centers, are at-risk for flooding (Office of the Assistant Secretary of the Army for Civil Works, 2016). FEMA estimates that within this flood-prone area there are approximately 8–10 million households that are exposed to flood risk, and these homes and other articles of personal property sustain an average of \$3.5 billion in losses each year, but perhaps more illustrative of the long-term risk is the fact that FEMA’s National Flood Insurance Program has paid over \$50 billion in flood insurance claims since it was created in 1978 (FEMA, 2016) (Table 2.1).

Table 2.1
Top Ten US Flood Disasters, 1900–2016 (by Total Cost of National Flood Insurance Program Losses Paid)

Event	Date	Number of Paid Losses	Amount of Paid Losses
Hurricane Katrina	Aug. 2005	167,978	\$16,317,519,550
Hurricane Sandy	Oct. 2012	129,888	\$8,147,841,619
Hurricane Ike	Sep. 2008	46,661	\$2,696,552,100
Hurricane Ivan	Sep. 2004	28,296	\$1,612,094,924
Hurricane Irene	Aug. 2011	44,263	\$1,339,381,261
Tropical Storm Allison	Jun. 2001	30,671	\$1,105,003,344
Louisiana Flood	May 1995	31,343	\$585,071,593
Hurricane Isabel	Sep. 2003	19,938	\$500,265,018
Hurricane Rita	Sep. 2005	9,528	\$474,688,462
Hurricane Floyd	Sep. 1999	20,439	\$462,326,389

Source: FEMA. 2016. *Significant Flood Events: 1978–Apr. 2016*. National Flood Insurance Program. <http://1.usa.gov/1UYm2lj>.

Flooding on a body of water is normally measured according to an established flood stage, which refers to the level at which inundation of normally-dry areas occurs. This elevation corresponds to an annualized likelihood of reaching such heights. For example, a flood stage that has a 1% chance of being reached or could be expected to occur once across a 100-year period would encompass a land area referred to as the “100-year floodplain” and an event that impacted this area would be called a 100-year flood event. Typically, structures contained within areas that carry a 1% annualized risk of flooding are considered to exist within the floodplain. A widespread misconception is that a 100-year flood is something that occurs only once per century, but it is not uncommon for multiple floods of such magnitude to occur even within a single decade in a single locale. Governments in many countries maintain river and stream gauges to monitor floodwater elevations and to provide information on rising water for use in sandbagging and dike construction. Such information also allows for early warning and evacuation to occur.

Additional Research

The following reports provide supplemental information about annualized flood losses in the United States:

- *Compilation of Weather-Related Fatalities; 1940–2015* (The National Weather Service): <http://bit.ly/1MgGivI>
- *Flood Damage in the United States, 1926–2003—A Reanalysis of National Weather Service Estimates* (Pielke, Roger A., Mary W. Downton, and J. Zoe Barnard Miller, 2002): <http://bit.ly/1SC1GIg>

- FloodSmart.Gov Flood Facts (National Flood Insurance Program):
<http://1.usa.gov/1PVNVSN>

Critical Thinking

Why do you think that maps detailing the floodplain can change over time? What activities might influence changes in a community's floodplain? How can flooding occur outside of the floodplain?

Earthquakes

An earthquake is a sudden, rapid shaking of the earth's crust caused by the breaking and shifting of tectonic plates beneath the earth's surface. This shaking can cause the collapse of buildings and bridges; cause disruptions in gas, electric, and phone services; and trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis). Structures constructed on unconsolidated landfill, old waterways, or other unstable soils are generally at greatest risk unless seismic mitigation has been utilized. Seismicity is not seasonal or climate-dependent and can therefore occur at any time of the day or year (Fig. 2.3).



FIGURE 2.3 Napa,
California, Aug. 24, 2014. This building was damaged by the magnitude 6.0 earthquake that struck Napa, resulting in a fenced-off street and closed businesses in the area. Photo by Ellis Maynard/FEMA.

Each year, knowledge about the location and behavior of the earth's seismic zones increases thanks to improvements in seismic detection and monitoring. It is a significant and growing risk because over one billion people worldwide live in seismic zones and population risk becomes concentrated as societies are shifting towards patterns of high-density urban settlement. Earthquake damage can be extensive, especially when buildings have been constructed without incorporation of seismic resistant materials and design. Earthquakes can cause secondary fire hazards when gas lines are severed and storage sites containing flammable materials are compromised. These fires can spread rapidly among

damaged buildings because water systems may be damaged and fire services are either unable to access the fire or are overwhelmed by other response requirements. Fire was a leading cause of thousands of deaths in 1995 when an earthquake struck Kobe, Japan, after debris from damaged and destroyed buildings blocked many access points for firefighters and equipment.

Earthquakes remain sudden events with little to no options for actionable advance warning despite scientists' and soothsayers' best efforts to accurately predict their onset. At present the best resource for prediction remains data on return intervals (average rates of recurrence) along known active faults—and even these can vary by decades or even centuries. Seismic-sensing technology is effective at measuring and tracking seismic activity, but given the nature of seismic events this technology can offer little more than a precious minute or two of notice. That being said, early-detection systems have proven useful in helping to reduce some forms of damage such as automatically shutting down infrastructure systems including railway transportation and nuclear reactors.

Each year hundreds of earthquakes occur in the United States, although the vast majority of these are barely perceptible. As earthquake strength increases, the likelihood of occurrence decreases. Major events, which are considered to be those with a magnitude greater than 6.5–7 on the Richter scale, occur in the United States only once every decade or so. But when events like these have occurred, they have ranked among the most devastating in the nation's experience. The Northridge earthquake that struck California in 1994, for instance, is the second most expensive natural disaster to ever occur in the United States as ranked by FEMA relief costs, resulting in almost \$7 billion in federal funding (and second only to Hurricane Katrina). The costliest disaster of all time remains the 2011 Tohoku Earthquake in Japan, which generated damages exceeding \$210 billion as measured by international reinsurance company Munich Re (with some estimates placing the total cost of reconstruction closer to \$250 billion) ([Munich Re, 2012; Conca, 2016](#))

The strength and effects of earthquakes are commonly described by the Richter and Modified Mercalli Intensity (MMI) scales. The Richter scale, designed by Charles Richter in 1935, assigns a single number to quantify the strength and effect of an earthquake across the entire area affected according to the strength of ground waves at its point of origin (as measured by a seismograph). Richter magnitudes are logarithmic and have no upper limit. The MMI also measures the effects of earthquakes, but rather than applying a single value to the event, it allows for site-specific evaluation according to the effects observed at each location. The MMI ([Table 2.2](#)) rates event intensity using Roman numerals I through XII. Determinations are generally made using reports by people who felt the event and observations of damages sustained by structures.

Table 2.2
Modified Mercalli Intensity Scale

MMI	Richter
-----	---------

MMI Intensity	Damages Sustained and Sensations Experienced	Scale Equivalent
I-IV (Instrumental to Moderate)	No damage sustained. Sensation ranges from imperceptible to that of a heavy truck striking the building. Standing motor cars may rock.	≤4.3
V (Rather Strong)	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.	4.4–4.8
VI (Strong)	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	4.9–5.4
VII (Very Strong)	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.	5.5–6.1
VIII (Destructive)	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	6.2–6.5
IX (Ruinous)	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.	6.6–6.9
X (Disastrous)	Most masonry and frame structures/foundations destroyed. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Sand and mud shifting on beaches and flat land.	7.0–7.3
XI (Very Disastrous)	Few or no masonry structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Widespread earth slumps and landslides. Rails bent greatly.	7.4–8.1
XII (Catastrophic)	Damage nearly total. Large rock masses displaced. Lines of sight and level are distorted. Objects are thrown into the air.	8.1 or greater

Source: USGS, 2009. Magnitude/Intensity Comparison. Earthquake Hazards Program.

<http://on.doi.gov/1rqcjFM>.

The primary structural mitigation measure employed in defense of earthquake risk is the use of resistant design and materials. Building codes have long guided seismic resistant construction, and those communities and countries that have strict building codes and effective monitoring measures to enforce those codes tend to fare better when earthquakes strike. There has been a traditional tug of war when it comes to seismic codes given that construction costs almost always rise with the stringency of code-dictated protections. As such, code provisions have tended to track seismic shake maps—where seismicity is believed or known to exist, more stringent codes are enacted. In the past, USGS shake maps only included seismicity that results from natural processes, but in Mar. of 2016 the agency began adding human-induced factors into risk calculations. This had the effect of increasing the seismic risk factors for over 7 million people, the number of people who live in areas with seismic risk. Because the American Society of Civil Engineers (an organization that provides guidance on construction codes) is in the final stages of publishing their guidelines, which are released every 6 years, man-made seismicity will not be accounted for. Given the scope of increases in seismicity from manmade impacts, including an increase in the state of Oklahoma from two earthquakes of 3.0 or greater magnitude in 2008 to 907 in 2015, there is a good chance that these factors will play a prominent role in future guidance (Mastroiani, 2016).

Critical Thinking

It is possible to assign Modified Mercalli Intensity values to historical earthquakes, but Richter magnitudes cannot be retroactively assigned. Why do you think this is true? Which of these scales is more useful in terms of disaster planning? Why?

Hurricanes

Hurricanes are cyclonic storms that begin as tropical waves that grow in intensity and size. Tropical waves continue to progress in size and intensity to

determined according to maximum sustained wind speeds. Eventually, a warm-core tropical depression can become a tropical storm if its maximum sustained surface wind speeds exceed 39 miles per hour (but remain under 73 miles per hour (mph)). Tropical cyclonic storms are further defined by their low barometric pressure, closed-circulation winds originating over tropical waters, and an absence of wind shear. It is interesting to note that the spinning of a cyclonic storm is influenced by the Earth's rotation, and as such winds always rotate counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere. This also means that they cannot form within five degrees north or south of the equator, and their path is always in a direction that takes them away from the equator.

A hurricane is a cyclonic tropical storm with sustained winds measuring at least 74 mph. These hurricane-force winds extend outward in a spiral pattern as much as 400 miles around a relatively calm center of up to 30 miles in diameter known as the "eye." Hurricanes are fed by warm ocean waters. As these storms make landfall, they often push a wall of ocean water known as a "storm surge" over coastal zones. Once overland, hurricanes cause further destruction by means of torrential rains and high winds. A single hurricane can last for several weeks over open waters and can run a path that extends the entire length of the eastern seaboard.

Hurricane season runs annually from Jun. 1 through Nov. 30, with Aug. and Sep. considered the peak months. Hurricanes are commonly categorized using the Saffir–Simpson scale ([Table 2.3](#)).

Table 2.3
The Saffir–Simpson Scale

Category	Conditions	Effects
1	Wind Speed: 74–95 mph Storm Surge: 4–5 feet above normal	Primary damage to unanchored mobile homes, shrubbery, and trees. Some coastal flooding and minor pier damage. Little damage to building structures.
2	Wind Speed: 96–110 mph Storm Surge: 6–8 feet above normal	Considerable damage to mobile homes, piers, and vegetation. Coastal and low-lying area escape routes flood 2–4 h before arrival of hurricane center. Buildings sustain roofing material, door, and window damage. Small craft in unprotected mooring break moorings.
3	Wind Speed: 111–130 mph Storm Surge: 9–12 feet above normal	Mobile homes destroyed. Some structural damage to small homes and utility buildings. Flooding near coast destroys smaller structures; larger structures damaged by floating debris. Terrain continuously lower than 5 feet above sea level (ASL) may be flooded up to 6 miles inland.
4	Wind Speed: 131–155 mph Storm Surge: 13–18 feet above normal	Extensive curtain wall failures, with some complete roof structure failure on small residences. Major erosion of beaches. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may flood (and require mass evacuations) up to 6 miles inland.
5	Wind Speed: Over 155 mph Storm Surge: Over 18 feet above normal	Complete roof failure on many homes and industrial buildings. Some complete building failures. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of low-ground, residential areas may be required.

Source: NOAA. 2016. Saffir–Simpson Extended Hurricane Wind Scale. National Hurricane Center.
<http://1.usa.gov/1NaMYpV><http://bit.ly/1MV2oDj>.

Hurricanes are capable of causing great damage and destruction over vast geographic areas. Hurricane Floyd in 1999 first threatened the states of Florida and Georgia, made landfall in North Carolina, and damaged sections of South Carolina, North Carolina, Virginia, Maryland, Delaware, New Jersey, New York, Connecticut, Massachusetts, and Maine. The damage was so extensive in each of these states that they all qualified for federal disaster assistance. Single hurricanes can affect multiple countries that fall into their path, as was the case

hurricanes can affect multiple countries that fall into their path, as was the case with Hurricane Mitch. This very large hurricane resulted in widespread death and destruction throughout Nicaragua, Guatemala, El Salvador, and Honduras.

The costliest disaster in US history in pure dollar figures (approximately \$80 billion; [Reuters, 2009](#)) and one of the deadliest in terms of lives lost and injuries sustained (1836 killed) was Hurricane Katrina ([Table 2.4](#)). Katrina reached Category 5 status with sustained winds of more than 175 mph—making it the fourth strongest hurricane recorded at the time—before making landfall as a Category 3 hurricane along the Gulf of Mexico coast. With strong winds and a storm surge reaching 28 feet, Katrina devastated coastal communities in Alabama, Florida, Mississippi, and Louisiana. Flooding and near total destruction occurred across almost 80% of New Orleans and much of Biloxi/Gulfport, Mississippi. The storm went on to cause further destruction in several other states as it made its way north toward Canada.

Table 2.4

Top Ten Most Expensive US Hurricanes, 1900–2013 (Ranked by non-NFIP insurance claims)

Hurricane	Year	Category	Damage (in millions, 2014 dollars)
Hurricane Katrina—AL, FL, GA, LA, MS, TN	2005	3	\$48,383
Hurricane Andrew—FL, LA	1992	5	\$23,785
Hurricane Sandy—NC, VA, DC, MD, PA, OH, CT, NY, MA	2012	1	\$19,307
Hurricane Ike—AR, IL, IN, KY, LA, MO, OH, PA, TX	2008	4	\$13,639
Hurricane Wilma—FL	2005	5	\$12,125
Hurricane Charley—FL, NC, SC	2004	4	\$9,083
Hurricane Ivan—AL, DE, FL, GA, LA, MD, MS, NJ, NC, NY, NC, OH, PA, TN, VA, WV	2004	3	\$8,639
Hurricane Hugo—GA, NC, PR, SC, VA, USVI	1989	4	\$7,055
Hurricane Rita—AR, AL, FL, LA, MS, TN, TX	2005	5	\$6,624
Hurricane Francis—FL, GA, NC, NY, SC	2004	4	\$5,583

Sources: Insurance Information Institute. 2016. Hurricanes. III Website. <http://bit.ly/23eQv35>.

More recent hurricanes, including Hurricanes Irene in 2011 and Sandy in 2012, served as reminders that even storms of weaker intensity can wreak considerable destruction from storm surge and flooding effects, and can devastate urban and rural areas alike. Hurricane Sandy, the largest recorded hurricane, spanning 1.8 million square miles (though second-largest after the 2001 Hurricane Olga with regards to the extent of its tropical-force winds), was only a Category 1 storm when it made landfall and soon after decreased to tropical storm intensity. Despite its weaker strength, Sandy ranks as the third most expensive hurricane in US history.

Case Study: The Impact of the Storm

Hurricane Katrina impacted different areas in different ways. Along the Mississippi Gulf Coast, Katrina generated a 25- to 30-foot tidal surge that swept

were severely damaged, and in some cases entire communities disappeared. In New Orleans, the principle impact was the flooding caused by the breaches in the levees that left almost 80% of the city underwater for up to 6 weeks.

However, some sections of the city—notably those areas closest to the river such as the French Quarter—experienced very little if any flooding. Tidal surge was only a factor in the city's Lower Ninth Ward, which together with St. Bernard Parish experienced a tidal surge that had traveled up the Mississippi River Gulf outlet. Wind and rain caused considerable damage to homes and businesses throughout the region.

Critical infrastructures such as water, power, communications, schools, hospitals, and childcare centers were severely damaged and disrupted in all impacted areas. Government facilities and private industry suffered massive losses. The White House report on Hurricane Katrina entitled, "The Federal Response to Hurricane Katrina: Lessons Learned", estimated damage to housing to be \$67 billion, while business property suffered \$20 billion in damages and government property suffered an estimated \$3 billion in damages (Townsend, 2006). Insured losses from Katrina are estimated to be the greatest ever in US history.

Over 1.3 million people evacuated before Katrina even made landfall, and an estimated 800,000 people were displaced for an extended period of time. One year after the hurricane, over one half of the 452,170 people that resided within the city limits remained evacuated, reducing its population to 223,388. The 2010 Census found that only 343,829 people claimed the city as their home, which meant a full 25% of the population had not returned in the 5 years that followed the event. Between 2010 and 2013, an inflow in recovery dollars resulted in drastic improvements in employment prospects, and coupled with the availability of services this made the city one of the nation's fastest growing in 2012 as rates of returning residents placing growth at about 5% per year (Bass, 2012). Since that time it has slowed considerably to less than 1% per year, but this is more likely the shadow of 2012's rapid influx (Adelson, 2015).

A Sandy Timeline

The following is a timeline of events starting with the initial formation of Hurricane Sandy as Tropical Depression 18 through the first days following landfall in the United States on Nov. 29, 2012. This timeline was compiled from several sources including FEMA, CNN, and National Geographic.

- *Monday, Oct. 22:* A tropical wave forms in the Western Caribbean Sea south of Jamaica and just off the coast of Nicaragua. It quickly grows to tropical depression status, becoming the eighteenth tropical depression of the season. Later the same day, the storm grows to tropical storm strength exhibiting 40 mph winds, thus earning it the title Tropical Storm Sandy.
- *Tuesday, Oct. 23:* Sandy strengthens to Category 1 hurricane status (sustained winds greater than 74 mph) and becomes the tenth hurricane and second major hurricane of the year.
- *Wednesday, Oct. 24:* Hurricane Sandy develops an eye, and crosses over

- *Wednesday, Oct. 24:* Hurricane Sandy develops an eye, and crosses over Jamaica. The storm causes 2 fatalities, including one from a landslide and another from electrocution. \$100 million in damages are sustained, and more than 1000 people require shelter (in addition to thousands of homes that lost roofs).
- *Thursday, Oct. 25:* Hurricane Sandy grows to Category 2 status (sustained 110 mph winds) and crosses Cuba. 11 people are killed, and over \$2 billion in damage is sustained including almost 133,000 homes damaged or destroyed.
- *Friday, Oct. 26:* The periphery of Sandy passes over Haiti and the Dominican Republic. Primarily as a result of flooding, the storm causes 54 fatalities and \$750 million in damages in Haiti, and 2 fatalities and \$30 million in damages in the Dominican Republic. Rain fell for 4 days in these two countries, leaving hundreds of thousands of people homeless, many of whom had been impacted by the 2010 Haiti earthquake. In anticipation of the storm, which is predicted to hit the central to northern East Coast, Governors in New York, Maryland, Maine, Washington (mayor), Pennsylvania, and North Carolina declare emergencies.
- *Saturday, Oct. 27:* Sandy weakens back to tropical storm status, and passes near the Bahamas, causing two deaths and \$700 in damages. This same day, the governors of Connecticut, New Jersey, and Massachusetts declare states of emergency. In New Jersey, residents of barrier islands and coastal casinos are ordered to evacuate.
- *Sunday, Oct. 28:* Sandy passes near Bermuda, though damages are minimal and there are no attributed fatalities. A state of emergency is declared in Rhode Island, and all rail services in and through New York are suspended at 7 pm. Rail services are also suspended in parts of Pennsylvania and New Jersey. Flights are suspended in the affected states. Evacuations are ordered in coastal areas of New York and Connecticut (see Fig. 2.4). A Presidential Disaster Declaration is issued for Connecticut, Washington DC, Delaware, Maryland, Massachusetts, New York, and Rhode Island.
- *Monday, Oct. 29:* Sandy continues to track several hundred miles off the Atlantic coast, but because of its massive size there are impacts in several Atlantic states and in Washington, DC. As it approaches New England, it changes course towards a more northwesterly direction, interacting with other storms in the area which increase its energy and size. Sandy makes landfall as a posttropical cyclone that evening, but despite its weaker wind strength it pushes a massive storm surge onto land in Connecticut, New York, and New Jersey.
- *Tuesday, Oct. 30:* Because of the storm's massive size, it continues to impact New York and New Jersey for several more hours as it moves into Pennsylvania. Assessments of damage begin to reveal the extent of impacts including 109 fatalities. Almost 8 million homes remained without power in 15 states and in Washington DC (and several areas did not see power return for over a week). Several area airports, including LaGuardia and Newark, remain closed due to storm damage while John F. Kennedy International Airport opens only for limited services. The stock market remained closed for

- *Wednesday, Oct. 31:* Sandy dissipates over Western Pennsylvania. Newark Airport reopens, as does the Federal Government which had been closed for the previous 2 days. Over 6.3 million households remain without power.
- *Thursday, Nov. 1:* Over 4.8 million households still have no power. LaGuardia airport reopens with limited capacity. Many public schools in the impacted areas remain closed.
- *Friday, Nov. 2:* Gas shortages begin affecting several states, and rationing policies are put in place. 3.3 million households remain without power and many schools remain closed.
- *Sunday, Nov. 4:* 2.2 million households remain without power, and many school districts announce that they will not be ready to open the following day. New York Mayor Bloomberg announces that as many as 40,000 New York City residents may be without housing as a result of the storm.
- *Wednesday, Nov. 7:* Over 600,000 households remain without power. Gas rationing is still in effect.



TOWN OF MADISON
CONNECTICUT 06443-2563

EMERGENCY EVACUATION ORDER

OCTOBER 28, 2012

TOWN OF MADISON First Selectman Fillmore McPherson has ordered MANDATORY EVACUATION of Low-Lying Areas by THIS AFTERNOON.

Your home is in an area that will flood or will become isolated from the rest of Town.

This is the **ONLY EVACUATION NOTICE** you will receive.

Your **FIRST** option is to seek shelter

NORTH OF I-95 with family, friends or in a hotel.

Your **SECOND OPTION** is to seek shelter at the

The EVACUATION CENTER

Located @ 8 Campus Drive in the GYM.

The Center will be open @ 6pm TODAY.

Bring a three day supply of clothes, medicine, specialty foods and personal hygiene products as well as a pillow and a blanket, pet food

If you have loose propane tanks you must secure them and turn them off.

THIS IS THE ONLY EVACUATION NOTICE YOU WILL RECEIVE!!!

PUBLIC Safety may NOT be able to assist you during the storm!

DO NOT underestimate the POWER and DESTRUCTION that Storm SANDY may Cause.

8 Campus Drive

(203) 245-5602

FAX 245-5609

FIGURE 2.4 Image of evacuation flyer distributed in advance of Hurricane Sandy (2012) in coastal areas expected to be impacted by a storm surge. Author (2012).

Source: CNN Library. 2015. Hurricane Sandy Fast Facts.
<http://cnn.it/1WQ5A67>; Drye, William. 2012. A Timeline of Hurricane Sandy's Path of Destruction. National Geographic. November 12. <http://bit.ly/1SmncEP>; FEMA. 2012. New Jersey – Hurricane Sandy. Disaster Declaration 4086.

October 30. <http://bit.ly/2fMETS1>.

In recent years, significant advances have been made in hurricane tracking technology and computer models. The National Hurricane Center in Miami, Florida, now tracks tropical waves from the moment they form off the coast of West Africa through their development as a tropical depression. Once the tropical depression grows to the strength of a tropical storm, the Hurricane Center assigns the storm a name. After the sustained wind speed exceeds 74 mph, the storm officially becomes a hurricane. The National Hurricane Center uses aircraft to observe and collect meteorological data on the hurricane and to track its movements across the Atlantic Ocean. It also uses several sophisticated computer models to predict the storm's path. These predictions are provided to local and state emergency officials to help them make evacuation decisions and to predeploy response and recovery resources.

Historically, high winds and flooding caused by storm surge have been the principal contributors to the loss of life and injuries and the property and infrastructure damage caused by hurricanes. A 14-foot storm surge caused by Hurricane Sandy in 2012 caused significant flooding in downtown Manhattan and along the densely populated New Jersey coast, bringing transportation in the area to a standstill and wiping out whole neighborhoods. Inland flooding caused by hurricane rainfall has also resulted in large losses of life and severe property damage, especially in zones of hilly or mountainous topography—as occurred in 2011 in Vermont during Hurricane Irene. Damage to the environment is another important factor related to hurricane-force winds and flooding. For instance, storm surges cause severe beach erosion, most notably on fragile barrier islands. Inland flooding from Hurricane Floyd inundated waste ponds on hog farms in North Carolina, washing the hog waste into the Cape Fear River and ultimately into the ocean. The storm surge created by Hurricane Katrina has had a profound impact on the environment—in some cases completely erasing or altering coastal areas. Dauphin Island was literally pushed toward the land by the force of the surge, and the Chandeleur Islands were completely destroyed. Breton National Wildlife Refuge, one of 16 wildlife refuges damaged by the storm, lost over half of its area. Much of this lost land had served as breeding grounds for marine mammals, reptiles, birds, and fish.

Storm Surges

Storm surges are defined as masses of water pushed toward and onto the shore by meteorological forces. They are the primary cause of the injuries, deaths, and structural damages associated with hurricanes, cyclones, nor'easters, and other coastal storms. When an advancing surge of water coincides with a high tide, the resulting increases in coastal sea levels are further exacerbated. Storm surges can reach several dozen feet under the right conditions, most notably when they coincide with an astronomical high tide or when they interfere with riverflow. In a surge, wind-driven turbulence becomes superimposed on the storm tide, thereby causing further damage to structures that are inundated

through wave action (each cubic yard of water exerts 1700 pounds of pressure on affected structures). The surge height at landfall is ultimately dictated by the expanse and intensity of the storm, the height of the tide at the time of landfall, and the slope of the sea floor approaching land. The longer and shallower the sea floor, the greater the storm surge will be.

Because much of the United States' densely populated Atlantic and Gulf Coast coastlines lie less than 10 feet above mean sea level, storm surge risk is extreme. Hurricane Katrina served as a reminder of the speed and intensity of the storm surge threat that persists in greater part due to increasing coastal development. After crossing southern Florida, Katrina followed a westward track across the Gulf of Mexico before turning northwest toward the Gulf Coast. The storm made its second landfall as a strong Category 4 hurricane in Plaquemines Parish, Louisiana, on Aug. 29, 2005. When the storm made its third and final landfall along the Mississippi/Louisiana border, its hurricane-force winds extended up to 190 miles from the center of the storm, and tropical storm-force winds extended for approximately 440 miles. The strength and wide geographical area affected by the storm resulted in a surge greater than anything previously recorded along the Gulf Coast. A 30-foot storm surge, combined with very strong wave action and constant high winds, resulted in a magnitude of destruction never before experienced in the United States. The enormous pressure by the force of the storm surge on the levee system that protected New Orleans caused several breaches that flooded the city with as much as 20 feet of water in some areas. The National Hurricane Center developed an animation showing how a hurricane causes a storm surge: <http://1.usa.gov/1MjtHI1>.

The National Hurricane Center operates a computerized model, called SLOSH (Sea, Lake, and Overland Surges from Hurricanes), to estimate storm surge heights and winds resulting from historical, hypothetical, or predicted hurricanes. When making calculations, SLOSH takes into account pressure, size, forward speed, track, and wind. The model's output is a color-coded map indicating storm surge heights for defined areas in feet above the model's reference level. These calculations are applied to a specific locale's shoreline, incorporating the unique bay and river configurations, water depths, bridges, roads, and other physical features. When SLOSH is used to estimate storm surge from predicted hurricanes, forecast data are entered every 6 hours over a 72-hour period and updated as new forecasts become available. SLOSH is accurate within a range of 20% plus or minus what is actually observed. The model accounts for astronomical tides, but it does not consider rainfall, riverflow, or wind-driven waves. However, this information can be combined with the model's output to create a more accurate analysis of at-risk areas.

The National Weather Service also runs a storm surge model for extratropical storms called ET-SURGE (also known as ETSS). This model is a variation of SLOSH that works with nonhurricane systems.

Tornadoes

A tornado is a rapidly rotating vortex or funnel of air extending groundward from a cumulonimbus cloud, exhibiting wind speeds of up to 300 mph. Approximately 1200 tornadoes are spawned by thunderstorms each year in the United States. Most tornadoes remain aloft, but the few that do touch the ground are devastating to everything in their path. The forces of a tornado's winds are capable of lifting and moving huge objects, destroying or moving whole buildings, and siphoning large volumes from bodies of water and ultimately depositing them elsewhere. Because tornadoes typically follow the path of least resistance, people living in valleys have the greatest exposure to damage.

Tornadoes have been measured using the Fujita-Pearson Tornado Scale since its creation in 1971 ([Table 2.5](#)). In 2006, research indicated that tornado damage was occurring from winds of much weaker intensity than previously thought, so the National Weather Service created an enhanced scale to measure them ([Table 2.6](#)). First used in Jan. 2007, this scale expands upon the original system's measure of damage to homes by adding 18 new damage indicators, including those that affect trees, mobile homes, and several other structures (giving a total of 28 indicators studied in the classification of a tornado). Under the enhanced Fujita-Pearson scale, a tornado that does not affect houses can still be classified.

Table 2.5
Original Fujita-Pearson Tornado Scale

Category	Conditions	Effects
F-0	40–72 mph	Chimney damage, tree branches broken
F-1	73–112 mph	Mobile homes pushed off foundation or overturned
F-2	113–157 mph	Considerable damage, mobile homes demolished, trees uprooted
F-3	158–205 mph	Roofs and walls torn down, trains overturned, cars thrown
F-4	207–260 mph	Well-constructed walls leveled
F-5	261–318 mph	Homes lifted off foundation and carried considerable distances, autos thrown as far as 100 m

Table 2.6
Enhanced Fujita-Pearson Tornado Scale

Category	Conditions	Effects
F-0	65–85 mph	Minor to light damage to structures and vegetation
F-1	85–110 mph	Moderate damage to structures and vegetation
F-2	111–135 mph	Heavy damage to structures and vegetation
F-3	136–165 mph	Severe damage to structures and vegetation
F-4	166–200 mph	Extreme damage to structures and vegetation
F-5	Over 200 mph	Complete destruction of structures and vegetation

Tornado damage occurs only when the funnel cloud touches down on land. In the United States, the states with the greatest tornado risk are Texas, Oklahoma, Arkansas, Missouri, and Kansas. Together these states occupy what is commonly known as "tornado alley." In recent years, however, tornadoes have struck in cities that are not regularly frequented by tornadoes, including Miami, Nashville, and Washington, DC. Tornadoes can also touch down in several places in succession, as occurred in Washington, DC in 2001. In that event, a single tornado first touched down in Alexandria, Virginia, just south of the city and then again in College Park, Maryland, just north of DC On May

22nd of 2011, an E-5 tornado with a width of approximately 1 mile touched down in Joplin, Missouri, wiping out a sizeable portion of the town. The short-lived event killed 158 people and injured over 1100, making it the most deadly tornado in over a half-century.

Tornado season generally falls between Mar. and Aug., although tornadoes can occur at any time of the year. Tornadoes tend to occur in the afternoon and evening, with more than 80% of all tornadoes striking between noon and midnight. Building collapse and flying debris are the principal factors behind the deaths and injuries tornadoes cause. Early warning is key to surviving tornadoes, as warned citizens can protect themselves by moving to structures designed to withstand tornado-force winds. Doppler radar and other meteorological tools have drastically improved the ability to detect tornadoes and the amount of advance warning time available before a tornado strike. Improved communications and new technologies have also been critical to giving people advanced warning.

Buildings that are directly in the path of a tornado have little chance of surviving unless they are specifically designed to withstand not only the force of the winds but also that of the debris “missiles” that are thrown about ([Fig. 2.5](#)). “Safe room” technology developed by FEMA and Texas Tech University, which retrofits a portion of a structure to withstand such winds through engineered resistant design and special resilient materials, offers those in the path of a tornado much greater survival likelihoods ([Fig. 2.6](#)). Safe rooms are often the most cost-effective way to mitigate tornado risk in communities that are already heavily developed, since they can be built into an existing (or new) structure for a small cost (estimated between \$3000 and \$5000).



FIGURE 2.5 Rowlett, TX, Dec. 28, 2015. Rowlett Fire Battalion Chief does a wellness check on residents in tornado-stricken Rowlett neighborhood. Photo by Andrea Booher/FEMA.



FIGURE 2.6 Tulsa, Oklahoma, Nov. 23, 2001. Disaster Ally in the Eastland Mall. Safe rooms can be designed with many different materials. Shown are concrete block walls, formed concrete walls, and a special ceiling framing. Photo by Kent Baxter/FEMA News Photo.

In order to greatly expand the mitigation benefits of safe rooms, similar technology is being developed for use in community mass-care shelters. New technologies in building design and construction are also being developed by FEMA and others to reduce the damage to buildings and structures not located directly in the path of a tornado. Many of the same wind-resistant construction techniques used effectively in high-risk hurricane areas have been found to be equally effective when applied to new and retrofitted structures located in tornado-prone areas.

Wildfires

Wildfires (often called “wildland fires”) are classified into three categories: *surface fires*, the most common type, which burn along the floor of a forest, moving slowly and killing or damaging trees; *ground fires*, which are usually started by lightning and burn on or just below the forest floor; and *crown fires*, which burn through the forest canopy high above the ground and therefore spread much more rapidly due to wind and direct contact with nearby trees. Wildland fires are an annual and increasing hazard due to the air pollution (primarily smoke and ash that travel for miles, causing further hazards to health and mechanical or electrical equipment), risk to firefighters,

environmental effects, and property destruction they cause.

As residential areas expand into relatively untouched wildlands (called the “wildland-urban interface”), the threat to the human population increases dramatically. Protecting structures located in or near the wildland poses special problems and often stretches firefighting resources beyond capacity. Wildland fires also cause several secondary hazards. For instance, when heavy rains follow a major fire, landslides, mudflows, and floods can strike on or downhill from the newly unanchored soil. These fires can also severely scorch the land, destroying animal habitats and causing barren patches that may persist for decades, increasing the likelihood of long-term erosion. Thousands of out-of-control wildfires on the Indonesian island Sumatra in 2015 produced a thick haze that choked all of Singapore and Brunei and large regions of Indonesia, Malaysia, Vietnam, Cambodia, the Philippines, and Thailand for weeks. Tens of millions of people were affected, hundreds of thousands experienced respiratory distress, and dozens died as a result of their exposure. The haze required closure of schools and businesses, a reduction in agricultural production, and production of greenhouse gases that equaled Germany’s estimated annual carbon emissions in the few weeks that the crisis persisted.

Several terms are used to classify the source and behavior of wildland fires:

- *Wildland fires*. Fueled almost exclusively by natural vegetation, these fires typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression.
- *Interface or intermix fires*. These fires occur in or near the wildland-urban interface, affecting both natural and built environments and posing a tactical challenge to firefighters concerned with the often conflicting goals of firefighter safety and property protection.
- *Firestorms*. Events of such extreme intensity that effective suppression is virtually impossible, firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted.
- *Prescribed fires and prescribed natural fires*. These are fires that are intentionally set or selected natural fires that are allowed to burn for the purpose of reducing available natural fuel.

Severe drought conditions and the buildup of large quantities of “fuel” (dead trees and flammable vegetation) on the forest floors have led to a steady increase in the prevalence of wildfires in the United States. Since the National Interagency Fire Center began tracking the number and acreage of fires in 1960, the average number of fires has fallen (presumably due to fire-prevention programs), while the annual acreage burned has risen. In other words, the fewer fires that are occurring are larger and more destructive on average. Before 2004, no year had seen more than 7 million acres burned, and few experienced greater than 4 or 5 million acres burned. Yet, from 2004 to 2007, each year exceeded 8 million and in 2006, 2007, and 2012, rates exceeded 9 million acres burned. In 2015, the number of acres burned exceeded 10 million for the first time (see [Table 2.7](#)) (NIFC, 2013). A number of factors have been attributed to these increases, the most significant of which include heat associated with El Niño and ongoing climate change effects ([Mann and Gong, 2015](#)). In addition to

the doubling of acres burned annually, experts claim that the annual period of higher-than-normal risk called ‘Fire Season’ has increased from 5 months in the 1970s to 7 months today ([Breslin, 2016](#)). For some parts of the country and the world—most notably in Australia—there is no longer a fire season given that new fires are breaking out even in the traditionally-safe winter months ([Richtel and Santos, 2016](#)).

Table 2.7
Total Wildland Fires and Acres Burned 1996–2016

Year	Number of Fires	Acres Burned
2015	68,151	10,125,149
2014	63,312	3,595,613
2013	47,579	4,319,546
2012	67,774	9,326,238
2011	74,126	8,711,367
2010	71,971	3,422,724
2009	78,792	5,921,786
2008	78,979	5,292,468
2007	85,705	9,328,045
2006	96,385	9,873,745
2005	66,753	8,689,389
2004	65,461	*8,097,880
2003	63,629	3,960,842
2002	73,457	7,184,712
2001	84,079	3,570,911

*2004 fires and acres do not include state lands for North Carolina.

Source: National Interagency Fire Center. 2016. Total Wildland Fires and Acres (1960–2015). NIFC Website. <http://1.usa.gov/1MISmM7>.

Mass-Movements

Mass-movements is a general category that includes several distinct hazards that are characterized by a horizontal or lateral movement of large quantities of physical matter. Mass movements inflict damage and loss of life through several different processes, including the pushing, crushing, or burying of objects in their path, the damming of rivers and waterways, the subsequent movement of displaced bodies of water (typically in the form of a tsunami), destruction or obstruction of major transportation routes, and alteration of the natural environment in ways in which humans are negatively impacted. Mass-movements are most prevalent in areas of rugged or varied topography, but they can occur even on level land as is typically the case with subsidence. The following hazards are each considered to be mass-movements:

- *Landslides*. Landslides occur when masses of relatively dry rock, soil, or debris move in an uncontrolled manner down a slope. Landslides may be very highly-localized or massive in size, and they can move at a creeping pace or at very high speeds. Many areas have experienced landslides repeatedly since prehistoric times. Landslides are activated when the mechanisms by which the material was anchored become compromised (through a loss of vegetation or seismic activity, for example).
- *Mudflows*. Mudflows are water-saturated rivers of rock, earth, and other debris that are drawn downward by the forces of gravity. These phenomena

develop when water rapidly accumulates in the material that is moved, like during heavy rainfall or rapid snowmelt. Under these conditions, solid or loose earth can quickly change into a flowing river of mud, or “slurry.” These flows move rapidly down slopes or through channels, following the path of least resistance, and often strike with little or no warning. Mudflows have traveled several miles in many instances, growing in size as they pick up trees, cars, and other materials along the way.

- *Lateral spreads*. Lateral spreads occur when large quantities of accumulated earth or other materials spread downward and outward due to gradual hydrologic and gravitational forces. Spreads can affect rock, but they also occur in fine-grained, sensitive soils such as clays.
- *Liquefaction*. When saturated solid material becomes liquid-like in constitution due to seismic or hydrologic activity, it can exacerbate lateral spreading.
- *Rockfalls*. Rockfalls occur when masses of rock or other materials detach from a steep slope or cliff and descend by freefall, rolling, or bouncing. Topples consist of the forward rotation of rocks or other materials above a pivot point on a hill slope. Rockfalls can occur spontaneously when fissures in rock or other materials cause structural failure or due to seismic or other mechanical activity (including explosions or the movement of heavy machinery).
- *Avalanches*. An avalanche is a mass of ice or snow that moves downhill at a high velocity. Avalanches can shear trees, cover entire communities and highway routes, and level buildings in their path. Avalanches are triggered by a number of processes, including exceeding critical mass on a steep slope or disturbances caused by seismicity or human activity. As temperatures increase and snowpack becomes unstable, the risk of avalanches increases. The primary negative consequences associated with avalanches are loss of life (mostly to backcountry skiers, climbers, and snowmobilers) and obstruction of major transportation routes. Around 10,000 avalanches are reported each year in the United States. Since tracking began in 1790, an average of 144 people have become trapped in avalanches annually, and of these an average of 14 sustain injuries and 14 die. The average annual value of structural damage is \$500,000, though the secondary costs associated with disrupted commerce can be much greater.
- *Land subsidence*. Land subsidence is the loss of surface elevation caused by the removal of subsurface support. Subsidence can range from broad, regional lowering of large landmasses to severe localized collapses. The primary cause of this hazard is human activity, including underground mining, extraction of groundwater or petroleum, and the drainage of organic soils. The average annual damage associated with subsidence in the United States is estimated to be at least \$125 million ([USGS, 1999](#)).
- *Expansive soils*. Soils and soft rock that tend to swell or shrink when their moisture content changes are referred to as expansive soils. These changes are extremely detrimental to transportation routes (including highways, streets, and rail lines) and structures that are built above the affected soils. The most extensive damage affects highways and streets. Two rock types that are particularly prone to expansion and that are prevalent in the United

States (primarily in the West) are aluminum silicates (e.g., ash, glass, and rocks of volcanic origin) and sedimentary rock (e.g., clay and shale).

Tsunamis

A tsunami is wave or series of waves that is generated by a mass displacement of sea or lake water. The most common generative factor behind tsunamis is undersea earthquakes that cause ocean floor displacement, but large tsunamis have been caused by volcanic eruptions and landslides as well. Tsunami waves travel outward as movements of kinetic energy (rather than traveling water) at very high speeds in all directions from the area of the disturbance, much like the ripples caused by a rock thrown into a pond. As the waves approach shallow coastal waters, wave speed quickly decreases and the water is drawn upward and onto land. Tsunamis can strike at heights exceeding 100 feet and can extend for a mile or more onto land as determined by topography. The force of a tsunami causes near total destruction of everything in its path.

Areas that face the greatest risk from tsunamis are those that lie less than 50 feet above sea level and within 1 mile of the shoreline. Successive crests (high water) and troughs (low water) can occur anywhere from 5 to 90 minutes apart. Tsunamis travel through deep water at approximately 450 mph, so the areas closest to the point of origin experience the greatest destruction and have the least amount of forewarning. Most tsunami-related deaths are the result of drowning, while the loss of services and related health problems associated with the incredible destruction of the infrastructure (including the loss of hospitals and clinics, water pollution, contaminated food and water stocks, and damaged transmission lines) adds to these statistics (see Fig. 2.7).

Additional Research

The Woods Hole Oceanographic Institute has developed a highly illustrative website about the causes and dynamics of tsunamis. This website also provides significant information about mitigation techniques, historical tsunami events, warning systems, modeling, and much more. The site can be accessed at <http://bit.ly/1RWWq26>.

The *New York Times* has created a ‘slider’ graphic that allows users to see the impact of the 2011 Great East Japan Earthquake Tsunami on affected communities by alternating between before and after satellite imagery of the most heavily impacted towns. This site can be accessed at: <http://nyti.ms/1NfXnAx>.

Case Study: Recent Major Tsunami Events

On Dec. 26, 2004, following an earthquake off the coast of the Banda Aceh region of Indonesia that measured 8.9 on the Richter scale, a series of tsunamis devastated vast coastal regions in 11 countries as far away as East Africa. The earthquake was the most powerful to occur in 4 decades, and it generated

waves reaching as high as 60 feet on coastal shorelines. The devastation from this event in terms of the geographical range and number of people affected within the brief timeframe is virtually unprecedented in modern history.

Due to an almost complete lack of regional tsunami warning capabilities, little advanced notice of the presence or severity of these impending waves was possible for the affected populations, many of whom included foreign tourists. As a result, most people had no opportunity to move to higher ground — an action that surely would have prevented the high number of injuries and fatalities that occurred. While the exact number of people killed will never be known, it is assumed to be greater than 150,000 and possibly more than 200,000. Over 500,000 injuries were reported, and ten times as many people were left homeless.

Almost 5 years after this terrible event, another quake struck in the nearby South Pacific region, causing large tsunamis in the islands of Samoa, American Samoa, and Tonga. These events were caused by an 8.0 magnitude earthquake near the Samoan Islands on Sep. 29. While significant infrastructure had been put into place to detect tsunamis and warn the at-risk populations, communication failures prevented many people from being informed. Upon personally observing now-familiar telltale signs of a coming tsunami, including the earthquake itself, and changing off-tide water levels, many residents fled to higher ground. However, 189 people still lost their lives, most of whom lived in hardest-hit Samoa.

On Mar. 11, 2011, a massive magnitude 9.0 earthquake struck off the coast of Japan near Tohoku. This quake, which ranks among the five most powerful earthquakes known, triggered tsunamis throughout Japan reaching heights as great as 133 feet. Tsunamis traveled throughout the Pacific, reaching as far as Chile, which saw a 6-foot wave. Prior to this event, Japan was arguably the nation most prepared for the tsunami threat, having endured dozens of major tsunami events in its recorded history. However, planning underestimated the potential height and severity of tsunamis and defenses were quickly overtapped. In some areas, tsunami water traveled as far as 6 miles inland. In addition to causing a major nuclear accident, over 15,800 people were killed, more than 6100 were injured, and thousands remain missing. The ongoing recovery effort has proven monumental given the extent of debris that exists from over one million buildings either totally or partially collapsed. The World Bank estimated in 2011 that the total economic impact from the event would be about \$235 billion, while more recent figures show reconstruction has already topped \$250 billion (making it the most expensive natural disaster to have ever occurred (Nakamura, 2011; Conca, 2016).



FIGURE 2.7 **Yuriage Port, Tohoku, Japan, Mar. 16, 2015.**

A resident of Yuriage Port, which was destroyed in the 2011 Great East Japan Earthquake, displays before and after photographs of the community to illustrate the scope of damage. Photo by Damon Coppola.

Volcanic Eruptions

A volcano is a break in the earth's crust through which molten rock from beneath the earth's surface (magma) erupts. Over time, volcanoes will upward and outward, forming mountains, islands, or large, flat plateaus called "shields." Volcanic mountains differ from mountain chains formed through plate tectonics (movement of the earth's crustal plates) because they are built through the accumulation of materials (lava, ash flows, and airborne ash and dust) rather than being pushed up from below. When volcanic material exits the earth, it is called lava, and the nature of its exit determines the land formations that result. Thinner lava typically moves quickly away from the source and becomes a large shield (as in the case of the Hawaiian Islands), while thicker lava and other materials form steeper volcanic formations.

When pressure from gases and molten rock becomes strong enough to cause an explosion, violent eruptions may occur. Gases and rock shoot up through the opening and spill over or fill the air with lava fragments. Volcanoes cause injuries, death, and destruction through a number of processes, including direct burns, suffocation from ash and other materials, trauma from ejected rocks, floods and mudflows from quickly melted snow and ice, burial under burning hot "pyroclastic" ash flows, and others. Airborne ash can affect people hundreds of miles away from the eruption and influence global climates for years afterward. Because airborne ash damages jet engines when it melts and forms glass on the engine surface, volcanic eruptions can and do cause significant travel disruptions across wide geographic regions. Regions affected by ash-related travel disruptions include Southeast Asia (Nov., 2015 from Mount Raung, Indonesia), South Pacific (Aug. 2014, Mt. Tavurvur, Papua New Guinea), and Northern Europe (Apr., 2010 from the Eyjafjallajokull volcano, Iceland).

Volcanic ash contaminates water supplies, causes electrical storms, and can cause roofs to collapse under the weight of accumulated material. Eruptions may also trigger tsunamis, flash floods, earthquakes, and rockfalls. Sideways-directed volcanic explosions, known as "lateral blasts," can shoot large pieces of rock at very high speeds for several miles. These explosions can kill by impact, burial, or heat. They have been known to knock down entire forests. Most deaths attributed to the Mount St. Helens volcano were a result of lateral blast and trees that were knocked down. Volcanic ash also has some positive implications because it can be used for construction or road building, as abrasive and cleaning agents, and as raw materials for many chemical and industrial uses. Ash-covered land is also rich in mineral nutrients and ideal for agricultural production.

Severe Winter Storms

Severe winter storms occur when extremely cold atmospheric conditions coincide with high airborne moisture content, resulting in rapid and heavy precipitation of snow and/or ice. When combined with high winds, the event is known as a blizzard. In the United States, these hazards originate from four distinct sources:

- In the Northwest, cyclonic weather systems originate in the North Pacific Ocean or the Aleutian Island region.
- In the Midwest and Upper Plains, Canadian and Arctic cold fronts push ice and snow deep into the heart of the nation—in some instances, traveling as far south as Florida.
- In the Northeast, lake-effect snowstorms develop when cold weather fronts pass over the relatively warm surfaces of the Great Lakes.
- The eastern and northeastern states are affected by extratropical cyclonic weather systems in the Atlantic Ocean and the Gulf of Mexico that produce snow, ice storms, and occasional blizzards.

On Jan. 1, 2006, the federal government began to use a new scale, similar to the scales used to measure the magnitude and intensity of hurricanes and tornadoes, to measure severe winter storms. The Northeast Snowfall Impact Scale (NESIS) provides a numerical value to storms based on the geographical area affected, the amount of snow accumulation, and the number of people affected. The minimum threshold for a storm's inclusion in the scale is 10 inches of snow falling over a wide area.

NESIS values range from 1 to 5 and include associated descriptors (from most to least severe) of Extreme, Crippling, Major, Significant, and Notable. The NESIS scale differs from other meteorological indices in that it considers population data. It uses the following formula:

$$\text{NESSIS} = \sum_{n=4}^{n=30} \left[\frac{n}{10} \left(\frac{A_n}{A_{\text{mean}}} + \frac{P_n}{P_{\text{mean}}} \right) \right]$$

where A equals the area affected and P equals the population affected. [Table 2.8](#) shows the categories assigned to severe winter storms using this formula.

Table 2.8
NESSIS Values

Category	NESSIS Value	Description
1	1–2.499	Notable
2	2.5–3.99	Significant
3	4–5.99	Major
4	6–9.99	Crippling
5	10.01	Extreme

Source: NOAA, 2006. <http://bit.ly/2ewROPy>.

Drought

Drought is defined as a prolonged shortage of available water, primarily due to insufficient rain and other precipitation or because exceptionally high temperatures and low humidity cause a drying of agriculture and a loss of stored water resources. Drought hazards differ from other natural hazards in three ways:

1. A drought's onset and conclusion are difficult to determine because the effects accumulate slowly and may linger even after the apparent termination of an episode.
2. There is no precise or universally accepted determination of what conditions constitute official drought conditions or the degree of drought severity
3. The drought's effects are less obvious and spread over a larger geographic area.

In very poor countries, drought is associated with famine, which is widespread starvation brought about by limited access to food resources. However, in the United States, where mechanisms are in place to move resources quickly from region to region, the threat of famine no longer exists. Drought does, however, impact food and other crops, and can severely hamper commerce on major rivers. A 2012–13 drought which exceeded anything experienced in over a half-century almost completely halted barge and other commercial traffic on the Mississippi River impacting billions of dollars of cargo and thousands of jobs ([Fears, 2013](#)).

The Southwest region saw a sustained severe drought between 2011 and 2016 (see [Fig. 2.8](#)). This represented the driest period in California's history, and the impacts prompted Governor Jerry Brown to institute a first-of-its-kind mandatory 25% water restriction beginning in 2015. The restriction remained in place for more than 1 year. So bad was this drought that by late 2015, California's largest lake (the 350-square mile Salton Sea) had receded so far from its normal shores that it began producing giant clouds of toxic dust. Hydrogen sulfide gas produced by decaying organic matter was also released, resulting in a rotten-egg smell that was experienced up to 130 miles away in urban centers like Los Angeles. As the lakebed dried and turned to dust, wind kicked it up and created smog that triggered asthma and contained arsenic and other poisons that were inhaled ([Iovenko, 2015](#)). Emerging hazards like these are often cited as harbingers of things to come if climate change trends are not reversed.



FIGURE 2.8 Lovelock, NV, Feb. 7, 2014.

State park rangers burned weeds on the exposed lakebed of the Rye Patch Reservoir in Nevada, which was at 3.5% capacity amid a drought that has caused the worst water shortage the region has faced in more than a century.

Photo by Max Whittaker, FEMA Website.

The Climate Prediction Center of the National Weather Service monitors nationwide drought conditions and provides visual reports on a weekly basis and seasonal reports on a monthly basis. A report of current drought conditions in the United States, referred to as the US Drought Monitor, can be viewed at <http://1.usa.gov/1RWYEys>.

Extreme Temperatures

Major diversions in average seasonal temperatures can cause injuries, fatalities, and major economic impacts when they are prolonged or coincide with other natural or technological events. Extreme heat, called a heat wave, occurs when temperatures of ten or more degrees above the average high temperature persist across a geographic region for several days or weeks. Humid or muggy conditions, which add to the discomfort of high temperatures, can occur when a “dome” of high atmospheric pressure traps hazy, damp air close to the ground. Excessively dry conditions that coincide with extreme heat can provoke wind and dust storms.

When little rain occurs in conjunction with extreme heat, droughts are likely to occur. Prolonged periods of heat have resulted in hundreds of thousands of deaths in single instances, including 600 in the Chicago area in 1995 and almost 37,500 in Europe in 2003. In most years, more than 1500 people die from exposure to excessive heat in the United States, making it the number one

weather-related killer of humans.

While there is no widely accepted standard for extreme cold temperatures, periods of colder than normal conditions exhibit a range of negative consequences, depending on where they occur and exactly how cold temperatures fall. Any time temperatures fall below freezing, there is the risk of death from hypothermia to humans and livestock, with the degree to which populations are accustomed to those temperatures a primary factor in resilience. Extreme cold can also lead to serious economic damages from frozen water pipes; the freezing of navigable rivers, which halts commerce and can cause ice dams; and the destruction of crops.

The increased prevalence and severity of periods of both extreme heat and extreme cold are often considered in conjunction with rising average annual temperatures as being clear evidence of global climate change. The World Meteorological Organization (WMO) established Intergovernmental Panel on Climate Change (IPCC) reports that world climates have altered in such a way that heat waves now involve higher temperatures, last longer in duration, and are more frequent in their occurrence ([IPCC, 2013](#)). Furthermore, the number of days considered “extremely hot” have increased over a majority of the United States and are expected to worsen throughout the century. Rising summer temperatures coupled with reductions in soil moisture will lead to more sustained heat waves, especially in the western and central regions. What is perhaps the most shocking is that temperature extremes which occurred only once per 20 years (5% annual likelihood) on average prior to 1980 are increasing at rates that will reach as high as 7 out of every 10 years (70% annual likelihood) by 2035 ([US National Climate Assessment, 2014](#)).

Coastal Erosion

Coastal erosion, which is the loss of land bordering a body of water, is measured as the rate of change in the position or horizontal displacement of a shoreline over a period of time. It is generally associated with storm surges, hurricanes, windstorms, tsunamis, and flooding hazards, and it can be exacerbated by human activities such as boat wakes, shoreline hardening, and dredging. El Niño and climate change effects (e.g., sea level rise) are also contributing factors. The primary concerns with regards to coastal erosion relate to the economic impacts that result when property and infrastructure located very close to the eroding coasts lose their natural protection from the water and waves or are affected by destabilization of the land upon which they were constructed (see [Fig. 2.9](#)).



FIGURE 2.9 Staten Island, NY, Nov. 12, 2012,

Aerial view of beach erosion on Coney Island, New York. Storm surge from Hurricane Sandy caused flooding and power outages throughout the island.

Photo by Andrea Booher, FEMA.

Environmental impacts from erosion include the loss of animal habitats and esthetic losses. Fishing industries that are dependent on coastal habitats can suffer great losses from changes caused by coastal erosion, and the loss of tourism can result in similar economic impacts. Coastal features like dunes and mangroves also provide a natural defense against several hazards, including tsunami waves and storm surges, so their loss may signal an increase in vulnerability from these hazards. Major disasters can damage or destroy these natural buffers, or simply cause direct erosion that equates to years of nondisaster-related erosion in a single event.

In California, 86% of the coastline is eroding at a rate that ranges from just a few inches to as much as 10 feet per year. While some homeowners have spent hundreds of thousands of dollars to strengthen their property from erosion, there are few permanent solutions and most at-risk properties must eventually be relocated or torn down. The problem is a perpetual one that is confounding development officials in many coastal towns that must determine the best ways to reduce future risk without changing the esthetic nature of the coastline or causing undue stress on the natural environment ([Olney, 2010](#)).

Thunderstorms

Thunderstorms are meteorological events that bring heavy rains, strong winds, hail, lightning, and tornadoes. Thunderstorms are generated by atmospheric imbalance and turbulence caused by a combination of several conditions,

including: unstable, warm air rising rapidly into the atmosphere; sufficient moisture to form clouds and rain; and upward lift of air currents caused by colliding weather fronts (cold and warm), sea breezes, or mountains.

A thunderstorm is classified as severe if its winds reach or exceed 58 mph, it produces a tornado, or it drops surface hail at least 1 inch in diameter.

Thunderstorms may occur singly, in clusters, or in lines. Thus, it is possible for several thunderstorms to affect one location in the course of a few hours. These events are particularly devastating when a single thunderstorm affects one location for an extended period. Such conditions lead to oversaturation of the ground and subsequent flash flooding and slope erosion.

Lightning is a major secondary threat associated with thunderstorms. In the United States, between 75 and 100 Americans are hit and killed by lightning each year. Many air disasters have been linked to thunderstorms because of the unpredictable and turbulent wind conditions they cause and the threat of electronic or mechanical failure caused by lightning strikes. When humans or structures are hit by lightning, the effect is devastating to both.

Hail

Hail is frozen atmospheric water that falls to the earth. Moisture in clouds becomes frozen into crystals at high temperatures and begins to fall under its own weight. Typically, these crystals melt at lower temperatures, but in the right conditions they pick up more moisture as they fall and are then lifted to cold elevations, which causes refreezing. This cycle may continue until the individual hailstones reach several inches in diameter under the right conditions. Because of the strength of severe thunderstorms and tornadoes, both can cause this cyclic lifting, and therefore they are often accompanied by hail. Hailstorms occur more frequently during late spring and early summer when the jet stream migrates northward across the Great Plains. When they fall, they can damage crops, break windows, destroy cars and other exposed properties, collapse roofs, and cause other destruction totaling nearly \$1 billion each year in the United States ([Insurance Information Institute, 2016](#)) ([Table 2.9](#)).

Critical Thinking

- Do you know what disaster-causing hazards your community is exposed to? Are there any hazards that haven't resulted in any disasters during your lifetime but still pose a significant threat? What hazards pose little or no threat to your community?
- Has your community ever experienced a disaster that required outside assistance (from neighboring communities, or the regional or national government)? What types of assistance did the outside resources provide? Were there any functions that the community was able to manage fully on its own (using local emergency management resources)?
- Are there any recurrent natural hazards in your community? If so, what

actions has your community taken to mitigate these recurrent hazards? Have these actions been successful in reducing the consequences or likelihood of the hazards?

- Is climate change causing any changes in your community's hazard profile? How is risk changing, and to what effect?

Table 2.9
Top 10 States by Hail Losses 2000–13

Rank	State	Total Claims
1	Texas	\$859,184,000
2	Minnesota	\$252,245,000
3	Oklahoma	\$217,950,000
4	Colorado	\$186,511,000
5	Illinois	\$180,037,000
6	Ohio	\$177,108,000
7	Georgia	\$166,875,000
8	Tennessee	\$153,966,000
9	Kansas	\$150,539,000
10	Indiana	\$148,635,000

Source: Verisk Insurance Solutions. 2014. Property Claims in the United States, 2000–2013.
<http://vrsk.co/1qdXN5b>.

Technological Hazards

Technological (or “man-made”) hazards are an inevitable product of technological innovation and human development. These hazards, which are associated with the failure, misuse, or unintended consequences of engineered structures, technologies, manufacturing processes, and other aspects of modern life, tend to be less understood than their natural counterparts. They are also trending in a direction of increasing frequency as the scope of and dependence on technology expands. The emergency and disaster events most commonly precipitated from technological hazards are those that arise in the transportation sector, are the result of failed infrastructure, occur in the course of industrial accidents or processes, or relate to a failure of a building or structure to protect inhabitants and contents.

Structure Fires

A structure fire is a fire that affects one or more of the different structural components of a building whether it is residential, commercial, industrial, or some other use. Structure fires threaten not only the building but also its contents and any living things that may be inside at the time (including responders). In high-density environments, structure fires can spread easily from building to building if they are not contained quickly. When wildfires occur along the wildland-urban interface, structural fires are a common secondary hazard that results from containment difficulties.

Archeological discoveries indicate that civilizations have been coordinating governmental resources to fight structure fires since the first century AD (Coppola, 2006). Structural fires can be triggered or exacerbated both by natural processes, including lightning, high winds, earthquakes, volcanoes, and floods, or by human origins, including accidents and arson, for example. Lightning is the most significant natural contributor to fires affecting the built environment. Buildings with rooftop storage tanks containing flammable liquids are particularly susceptible. Fire departments responded to almost 1,298,000 fires in the United States in 2014. These fires resulted in 3275 fatalities, 15,775 injuries, and \$11.6 billion in property loss. Of these, 47.0% were outside and “other” fires, 38.1% were structural fires, and 14.9% were vehicle fires.

Residential fires represented 28.3% of all fires and 74% of structural fires. Of all civilian fire fatalities, 84% occurred in the home, where a home is defined as a one- or two-family dwelling or an apartment. Intentionally set structure fires occurred approximately 19,000 times and represented 3.8% of structural fires and \$613 million in structural property losses. Approximately 8000 vehicle fires were deliberately set, causing an estimated \$116 million in property damage (Haynes, 2015).

Current statistics and information on fires in the United States are maintained by the National Fire Protection Agency at <http://bit.ly/1uwzxeC>.

Dam Failures

Dams are constructed for many purposes, the most common being flood control and irrigation. When dams that retain large quantities of water fail, large-scale uncontrolled releases of stored water occur and threaten anything located downstream. Dam failures pose an extreme flood risk due to the sudden and severe impacts that can result. Failure is uncommon, but when it occurs it is most often the result of poor or improper maintenance; overtopping (as in the case of a flood); poor design; or structural damage caused by a major event such as an earthquake, collision, or blast. Dams may be either publicly or privately owned and maintained, and as such monitoring them can pose a challenge to the various government offices tasked with assessing and managing their associated hazard risk. The United States boasts the second-greatest number of dams, exceeded only by China. In 2013, the American Society of Civil Engineers, which rates US infrastructure, gave US dams a grade of D given that the number of deficient dams exceeds 4000 (of about 84,000 that exist in the country), including almost 2000 of which that are considered to be “high-hazard dams.” ASCE estimates that for everyone dam that is repaired or made more resilient, two more are declared deficient.

More information on the status of US dam infrastructure can be found by viewing the ASCE report at: <http://bit.ly/1VRbkvw>.

Hazardous Materials Incidents

Hazardous materials are chemical substances that if released or misused can pose a threat to property, the environment, or health. Such chemicals are prevalent in many industries and products, including agriculture, medicine, research, and consumer product development. Hazardous materials may be explosive, flammable, corrosive, poisonous, radioactive, or otherwise toxic or dangerous. Releases typically occur as a result of transportation accidents or accidental releases at production and storage facilities. Depending on the nature of the chemical, the result of a release or spill can include death, serious injury, long-lasting health effects, and damage to buildings, homes, the environment, and other property.

While hazardous materials spills occur most commonly in homes, the quantities released are almost always too small to cause more than a highly-localized hazard. It is the transportation or industrial use of such products that leads to major disaster events upon release. At present, hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States—ranging from major industrial plants to local dry cleaning establishments or gardening supply stores.

More information about hazardous materials and related incidents in the United States can be found at the US Department of Transportation’s Pipeline and Hazardous Materials Safety Administration (PHMSA) website: <http://bit.ly/2ewV9Vt>.

Nuclear and Radiation Accidents

Radioactive materials, whether naturally occurring or technologically enhanced, have provided significant benefits since their discovery. These include the generation of power, scientific treatments and experiments, new detection, and imaging technologies, and many other benefits. However, because the ionization caused by these materials can result in immediate and lasting tissue damage to humans and animals upon exposure, radioactive materials must be handled and contained using specialized techniques, materials, and facilities. National and international law strictly dictates who may possess these materials, how they can be used, and how and where they must be disposed of.

Exposure to radioactive materials can be the result of an accidental or intentional spill, breach of a containment vessel, escape of gasses, or an explosion. Radioactive material remains radioactive until it has shed all of its ionizing particles, called radio nuclides. This process, called radioactive decay, is the primary source of health risk to life. When released quickly, dust or gasses may rise into the atmosphere in a characteristic “plume,” which carries the contaminants far from the point of origin with atmospheric currents, depositing it as radioactive fallout along its course.

In the United States, the greatest threat of exposure to radioactive materials comes from an accident or sabotage at one of the nation’s many nuclear power plants. As the distance to a nuclear power plant decreases, the risk of exposure increases, and the likelihood of surviving in the event of a large-scale release of materials decreases. Since 1980, utilities operating commercial nuclear power plants in the United States have been required to maintain on- and off-site emergency response plans as a condition of maintaining their operating licenses. On-site emergency response plans are approved by the Nuclear Regulatory Commission (NRC). Off-site plans (which are closely coordinated with the utility’s on-site emergency response plan) are evaluated by FEMA and provided to the NRC, who must consider the FEMA findings when issuing or maintaining a license.

A catastrophic failure of a nuclear reactor is called a meltdown, indicative of the failure of the reactor’s containment due to the incredibly high heat caused by a runaway nuclear reaction. The worst nuclear accident to date was the result of a reactor core meltdown that occurred at the Chernobyl Nuclear Power Plant in the Ukraine on Apr. 26, 1986. So great was the radioactive plume and resultant fallout, which traveled as far as and landed primarily in neighboring Belarus, that more than 336,000 people had to be evacuated and permanently resettled. Thirty years later, the area is still uninhabitable. Following the Great East Japan Earthquake in Mar. of 2011, several nuclear reactors suffered failures or meltdowns, causing only the second nuclear disaster to register a Level 7 (of a possible 7) “Major Accident” designation on the International Nuclear Event Scale (<http://bit.ly/1SLXdCI>).

In the United States, the most dangerous radioactive event, which was ultimately contained (thereby preventing any realized threat to human life),

was the partial core meltdown at the Three Mile Island Nuclear Generating Station in Pennsylvania on Mar. 28, 1979. The accident happened when a system that cooled the nuclear reaction, and therefore controlled the temperature of the reactor core, failed to operate correctly. While some nuclear material was released, the effect on people exposed was similar to that of receiving one or two medical X-rays. The public reaction to this event, however, significantly changed the course of the nuclear power industry in the United States, as expansion abruptly ended.

Additional Research

The Nuclear Regulatory Commission released a report on the Three Mile Island nuclear accident. This report provides a summary of the events that occurred on Mar. 29, 1979, and describes the health effects of the resulting release. Most significantly, it provides insight into the changes that the event ultimately had on the industry and on society's perception of the safety of nuclear power. This report site may be accessed at <http://bit.ly/23CZCHz>.

For a full description of the events that occurred during and following the Great East Japan Earthquake at the Fukushima nuclear power plants, visit the World Nuclear Association site that summarizes research that has been conducted on the incident. This site is interesting because the organization maintains that very little risk remains and that the evacuation itself is causing more harm than the exposure posed by radiation. This page can be accessed at: <http://bit.ly/1oVWXZL>.

Terrorism

Terrorism is defined as the use of force or violence against individuals (civilians) or property for purposes of intimidation, coercion, or spreading fear in pursuit of political, religious, or ideological goals. Radical or militant political and religious groups, which include or have included (for example) the Islamic State of Iraq and the Levant (ISIL, or ISIS), al Qaeda, the Khmer Rouge, the Revolutionary Armed Forces of Colombia (FARC), and Sendero Luminoso, typically lack sufficient military means or public support to fully realize broad societal change that favors their representative views. These groups turn to the use of terrorism as a low-cost way to raise awareness of their message and influence the attitudes and actions of those presumably at-risk from subsequent attacks. Terrorism, like war, is an influential tool that has been used by civilizations since the dawn of recorded history, and it will likewise always exist as a threat that must be mitigated and likewise managed.

Terrorism has been prevalent in the United States since long before the Sep. 11, 2001 attacks on New York and the Pentagon, but the vast majority of these events originated from individuals or domestic organizations, used simple explosives, and were small in scale and effect. Some of the most notorious terrorists and groups that were labeled as “terrorist organizations” are the McNamara Brothers (who bombed the *LA Times* building in 1970), the so-called “Unabomber” Theodore Kaczynski, Eric Rudolph (the “Centennial Olympic Park bomber”), Timothy McVeigh (the mastermind behind the Oklahoma City bombing), the Animal Liberation Front, the Ku Klux Klan, and the Army of God.

The Al Qaeda terrorists who performed the simultaneous terrorist attacks in Arlington, Virginia; New York City; and Shanksville, Pennsylvania, elevated the perception of terrorism as a hazard risk and thus ensured its high placement on the public, policy, and media agendas. The highly graphic, violent, and devastating impact of the attacks which killed almost 3000 people, caused billions of dollars in damages, and had immeasurable effects on the national and world economies, were all credited with this monumental shift. So prominent were these attacks that the persistent threat from domestic terrorists and terrorist organizations—which have been successful in bringing about several attacks since 9/11 including the 2001 anthrax attacks, the Washington, DC sniper attacks in 2002, and many bombings and shootings at courthouses, abortion clinics, research centers, military recruitment centers, to name a few, is often given far less attention.

The primary method by which governments manage the terrorist threat is through both covert and overt intelligence gathering. Monitoring methods have improved and expanded as technological advancements in tracking, imaging, and recording have occurred. Expanded statutory authorities have also enabled more effective monitoring of phone calls, bank transactions, and other activities (to the dismay of civil rights groups who oppose such controls). Clearly, the ability of a government to monitor the terrorist risk challenges the delicate

balance that exists between personal privacy and national security.

Containment of the terrorist threat is another method of control, exhibited in the form of checkpoints (like in commercial airports worldwide), barriers at public and secure buildings, and security cameras and personnel placed in strategic locations. The US government has developed agreements with many other national governments to coordinate transnational terrorism through the use of cargo safety initiatives, traveler tracking, and monitoring of groups known to harbor terrorist intentions against the United States.

The Federal Bureau of Investigation (FBI) is the government agency in charge of tracking and preventing terrorist activities in the United States. The FBI categorizes terrorism according to two subgroups: (1) domestic terrorism, which involves groups or individuals whose terrorism activities are directed at elements of government or population without foreign direction; and (2) international terrorism, which involves groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside the United States or whose activities transcend national boundaries.

CBRN Incidents

There is a distinct class of weapons that has the potential to bring about an extraordinary degree of deaths, injuries, and property destruction. Several names have been used to describe this special class, including weapons of mass destruction (WMD), NBC (nuclear, biological, and chemical) weapons, and ABC (atomic, biological, and chemical) weapons, but the conventional acronym used in contemporary practice is CBRN (pronounced “see-burn”), representing the acronym formed by the first letters of the chemical, biological, radiological, and nuclear devices that the category includes. Although these weapons are considered weapons of mass destruction because of their potential for creating such widespread destruction, it should be noted that they can also be distributed in such a way as to harm or kill only one or a very few individuals.

CBRN weapons may be possessed and used by both terrorists and foreign national governments. The processes by which control and containment are conducted, however, differ greatly between the two. In the case of official governments, mitigation is generally performed through the use of diplomacy, international agreements, and sanctions. With terrorist groups, such measures have little or no effect, so control must be performed through the use of raw materials regulation and monitoring, surveillance and other intelligence gathering, and, at times, military action (usually not until all other options have failed).

Chemical Weapons

Chemical weapons use naturally occurring or man-made liquids, gasses, or solids (typically in the form of dust), called chemical agents, to inflict toxic or destructive effects on humans, animals, plants, or property through exposure. Chemical agents are most commonly created for the sole purpose of killing,

injuring, or incapacitating people. These agents must be delivered directly onto or in close proximity to intended victims in order to have the intended effect, but there are many ways that this can be accomplished. For instance, chemical agents may be aerosolized, dropped, splashed, poured into water supplies or foods, released by bombs, or sprayed from containers or vehicles (including aircraft, boats, or vehicles).

One of the greatest challenges facing emergency management and response officials is the detection of chemical agents that have been delivered via covert means. Chemical weapons can be invisible, odorless, and tasteless, and they may have an immediate identifiable effect (a few seconds to a few minutes) or have a delayed effect. The presence of a chemical agent is often easy to detect because of several telltale signs, including a sudden difficulty breathing; nausea; a burning sensation in the skin, eyes, or lungs; disorientation or loss of consciousness; or seizures.

In the case of common chemicals, such as chlorine gas, personnel familiar with the chemical's characteristics can often identify what chemical was released by smell or sight and the presence of certain effects as just listed (as well as the presence of specific containers or delivery mechanisms). However, with most chemical agents, identification of the specific chemical once detection has occurred is only possible using advanced technology. Because different chemicals have unique processes by which they are neutralized or their effects treated, identification is key to response and remediation.

These are the six primary categories of chemical agents, distinguished by their effect on humans:

- Pulmonary, or “choking,” agents
- Blood agents
- Vesicants or blister agents
- Nerve agents
- Incapacitating agents
- Irritants (typically used for riot control but capable of spreading panic when used by terrorists)

Biological Weapons

Biological weapons use biological agents (live organisms or the toxins produced by live organisms—either naturally occurring or genetically engineered) to kill or incapacitate people, livestock, and crops. There are three primary categories of biological agents: bacteria, viruses, and toxins.

As with chemical agents, biological agents can be delivered covertly or overtly. But unlike chemical agents, most biological agents have delayed effects. In fact, it may take days or even weeks before the presence of an attack involving a biological agent is recognized. This is especially true with bacteria and viruses, which have a defined period of delayed “incubation” following exposure where no symptoms may be exhibited by victims. Toxins, on the other hand, typically exhibit the same rate of effect as seen with chemical agents.

Recognition of a biological attack is most likely to be made by the public

health service, which monitors illnesses and deaths nationwide, and which would therefore see an unexplained upsurge in similar yet abnormal (or even unidentifiable) causes of illnesses and death. Other methods of detection include threat identification, communication from perpetrators (terrorists often take credit for their attacks), the discovery of the agent or delivery and production materials, and intelligence gathering.

Biological agents are difficult to grow and maintain. Although many of these agents decay rapidly when exposed to sunlight and other environmental factors, others (such as anthrax spores) are resilient and can survive for decades or longer even in harsh conditions. Biological agents are particularly dangerous when they involve transmissible (contagious) illnesses like smallpox because the effect can quickly spread beyond the initially-exposed victims.

Human-to-human transmission has been the primary source of infection in past epidemics that involved pathogens capable of use as a biological weapon, including smallpox, plague, and the Lassa virus. When biological agents target plants or animals, they can devastate economic sectors (including agriculture and livestock) and instill fear equal to that of agents that affect humans and can have crossover effects on humans. For instance, in 1918, the German army spread anthrax and other diseases by distributing infected livestock and animal feed.

As with chemical weapons, the primary defense lies with rapid and accurate recognition and identification. Each agent has a highly specific treatment and decontamination method associated with it. Biological agents are grouped into three categories: Category A agents are those that have great potential for causing a public health catastrophe and are capable of being disseminated over a large geographic area. Examples of category A agents are anthrax, smallpox, plague, botulism, tularemia, and viral hemorrhagic fevers. Category B agents are those that have low mortality rates but may be disseminated over a large geographic area with relative ease. Category B agents include salmonella, ricin, Q fever, typhus, and glanders. Category C agents are common pathogens that have the potential for being engineered for terrorism or weapon purposes. Examples of category C agents are hantavirus and tuberculosis.

Radiological Weapons

Radiological weapons use radiological agents (materials that cause harm by emitting ionizing energy) are sought by terrorists because of their potential to instill fear, cause sickness or death in exposed victims, and contaminate property. Unlike nuclear weapons, radiological weapons actually require very little technological innovation to use since the materials themselves are naturally hazardous and therefore need only be dispersed. The primary factors behind their infrequent use include the limited quantities with which they exist in nature and the great monitoring and control that is associated with their possession. The most common locations where radiological materials may be found include research laboratories, medical institutions, and hazardous waste containment facilities.

The greatest threat from a radiological agent is associated with a terrorist's dispersal of radiological materials using either an explosive device (commonly called a "dirty bomb") or another nonexplosive method like spraying or aerosolization (called a "radiological dispersion device," or RDD). Most experts agree that the greatest physical risk associated with a dirty bomb is the explosive blast itself rather than the exposure that follows from the inclusion of radiological materials. However, the fear and panic that would likely result once detection of radioactive materials occurred on victims and in the debris could have far-reaching economic impacts in the immediate area of the attack and throughout the country—or even the world.

An alternative threat to the dirty bomb or RDD that concerns many governments is a terrorist attack on a nuclear facility. Such an attack could result in far greater dispersal of radiological materials and based on past nuclear accidents could devastate a large geographic area for decades. While most nuclear facilities were designed to withstand great impacts and large explosions (including several constructed to withstand a direct hit by a commercial airliner), the possibility of sabotage on safety and cooling systems or the use of an explosive strong enough to breach containment exists. Additionally, the radioactive waste produced at these facilities is usually stored on-site. While this material is of little use for power generation, it would be extremely valuable to a terrorist who wanted to cause harm.

Nuclear Weapons

Nuclear weapons are highly engineered and difficult to produce weapons that cause great harm by initiating a fission or fusion chain reaction explosion. Nuclear explosions are attainable only through the acquisition of construction of highly advanced weapons technologies, and using only the most refined nuclear materials (and in quantities necessary to sustain a blast effect). A nuclear blast emits intense light, heat, and damaging pressure and disperses radioactive debris over a widespread area, leading to the contamination of air, water, and ground surfaces for miles around. While the likelihood of a terrorist organization developing an operational nuclear weapon is almost nil, there is always the possibility that rogue states known to support terrorist organizations or states unable to monitor and protect their nuclear weapons caches could become a source of such weaponry for terrorist groups with great financial means.

The effect of successful terrorist use of a nuclear weapon would almost certainly include the death of thousands of people and the destruction of billions of dollars in property, especially if it was detonated in a major urban center. The detonation of atomic weapons in Hiroshima and Nagasaki provide some insight into the massive power of a nuclear weapon given that these two bombs resulted in the death of over 220,000 people and almost total destruction of the city centers in these two metropolises. It is important to note that the two nuclear bombs used in World War II are by today's standards considered small given the availability of much more powerful weapons in the modern global

arsenal.

Additional Information About CBRN

For more information on weapons of mass destruction, visit the following websites:

- Federal Bureau of Investigation: <http://1.usa.gov/1oW51K5>
- Central Intelligence Agency: <http://bit.ly/1oW5dco>
- Ready.Gov: <http://1.usa.gov/1qH7XMb>

Critical Thinking

- What technological hazards affect your community? What are the sources of those hazards?
- Society accepts certain technological hazards because they enjoy the benefits associated with the action or process that causes the hazard. For instance, nuclear power plants produce inexpensive electricity with almost no carbon emissions. However, in the event of an accident, a major disaster could result. What benefits does your community enjoy despite the existence of associated technological hazards, and what are those hazards?

Hazards Risk Management

The process by which individuals, communities, and countries deal with the hazard risks they face is known as hazards risk management (HRM) or Disaster Risk Management (DRM) in the international context. Management of major hazard risks is primarily a function of government, though the private and nonprofit sectors are to an increasing degree including disaster risk mitigation in their enterprise risk management efforts. Several frameworks and processes have been developed in the United States and throughout the world to systematically and effectively manage hazard risk in order to decrease the likelihood and consequences of disasters. Even within the United States, it is not uncommon to come across different approaches to hazard risk management utilized in agencies at the same level of government, as is true with the Federal Emergency Management Agency (FEMA) and the Department of Defense. Regardless of the specific processes used, almost all HRM methodologies include the following four steps:

1. Identify the hazards.
2. Assess the risks for each hazard identified.
3. Analyze the hazards risks in relation to one another.
4. Treat the hazards risks according to prioritization.

Differences in authority and accountability, terminology, technologies, stakeholder input, monitoring and reporting, funding streams, and other issues differentiate the various methods encountered.

Hazard identification, as the name suggests, is the process through which hazards that have or could affect an area of focus are identified and described.

This can be achieved using a variety of methods, including historical study, brainstorming, scientific analysis, and subject matter expertise. For more commonly-occurring hazards, such as snowstorms or tornadoes, the presence of the hazard will be obvious and identification assured. However, for new or emerging hazards, such as many in the technological and intentional categories (including terrorism), only the knowledge or opinion of experts can provide insight into the presence and range of these rare, yet real, hazards. The identification process results in an exhaustive list of hazards if done properly. The effort becomes increasingly effective if it considers each hazard not only in an individual context but also as it relates to the entire hazards portfolio. The presence of one hazard tends to influence or even create other hazards within the same geographic area. For instance, an area that is prone to landslides due to stark topography is even more likely to experience landslides if seismicity or heavy rainfall is also a concern.

In order to best assess and analyze a hazard, a hazard profile should be created. Profiles are concise reports that explain what the hazard is but also how it exists within the area of concern and other key information. The following are examples of information that are often investigated:

- General orientation overview of the hazard
- The location of the hazard within and surrounding the area of study and the spatial extent of its effects
- The duration of an event caused by the hazard
- Seasonal or other time-based patterns followed by the hazard
- Speed of onset of an actual hazard event
- Availability of warnings for the hazard

Assessment is conducted in order to understand the nature of the threat posed by each identified hazard. Hazard risk is calculated according to two primary measures: hazard likelihood and hazard consequence. When viewed in conjunction, these two factors enable prioritization for treatment. One might assume that the higher the likelihood/consequence combination, the more likely it is that a hazard will be treated—but there is more to the calculation.

Communities consider other factors including the cost of mitigation, esthetics, some loss of services or resources, and other factors. Communities and countries must consider a range of options to achieve the greatest reduction in lives lost and property damaged per financial and human cost units expended.

Risk assessment methodologies may incorporate both qualitative and quantitative measurement systems, as well as computer-assisted models that enable accurate prediction of natural hazard risk (e.g., the FEMA-supported HAZUS model predicts the consequences of user-defined earthquakes, floods, and hurricanes). The validity and utility of any risk assessment outcome is defined by the quality and availability of the data provided. Emergency managers rely on a range of sources to develop accurate likelihood and consequence measures, despite the fact that these factors are constantly changing as a result of human development, access to new information, changes in climate and demographics, and many other factors that complicate the equation. Furthermore, it can be impossible to extrapolate exact numerical

values that are representative of these two factors for each, or even any, of the hazards that have been identified.

As previously mentioned, there are a variety of unique risk assessment methodologies that have been developed independently of each other—however the similarities are numerous. In the United States, Australia, and New Zealand, for instance, the qualitative assessment methods that government guidance espouses are almost identical in their format while their wording and appearance differ only slightly. These systems simplify the process by enabling users to limit the need for intensive mathematical calculation by grouping together ranges of values into a limited number of possible likelihood and consequence designations (typically five to seven designations). Qualitative systems are not exact, but they facilitate a process that might otherwise be too difficult or time-consuming and therefore disregarded.

Another risk assessment method is the Composite Exposure Indicator (CEI) approach, which is based on the effects of a single or multiple hazards on a series of indicator variables focused primarily on infrastructure, such as roads, pipelines, hospitals, public water supply, and so on. This system, which relies on databases maintained by FEMA and other sources, is a measure of exposure of 14 variables that produces a number that is then correlated to the population affected.

Hazard risk analysis is performed in order to determine the relative seriousness of hazard risks that have been identified and assessed. Using the processes just listed to identify the hazards that threaten the community or country, to characterize them, and to determine their likelihoods and consequences, those tasked with risk management will have gathered all of the information necessary to determine how these risks compare to one another. It is important that each hazard has been identified, described, mapped, and analyzed according to its likelihood of occurrence and its consequences (should a disaster occur) for comparison to be possible.

Hazard risk analysis is vital because communities have a range of competing budgetary pressures and are therefore unable to fully mitigate all hazard risks. Each of the community's natural, technological, and intentional hazards requires a different degree of mitigation and risk reduction, and those that show the greatest benefit per unit of cost are typically the best choice. Ultimately, the goal is to lower the number of deaths, injuries, and damage to property and the environment associated with hazards to an acceptable degree, so it is important that time and resources are dedicated to the actions and activities that give the greatest results overall.

The outcome of risk analysis is often illustrated with the help of a risk matrix (also called a 'heat map' when colors are used). To create a risk matrix, the user draws a graph wherein the x - and y -axes represent risk likelihood and consequence respectively. The values of highest $x-y$ value appear placed in the upper right quadrant while those with the lowest values appear in the bottom left quadrant. If a quantitative system has been used, the defined values selected for each of the two risk factors are transferred onto this matrix.

Otherwise, if quantitative representations of likelihood and consequences have been used, the minimum and maximum of all hazards analyzed represent the high and low limits of the two graph axes. Then, all of the hazards are plotted onto this matrix together, thereby providing a visual illustration of a community, country, or even an organization's hazard risks in relation to one another. Using the results of the risk matrix, a prioritized ranking of risks is created. This list becomes the basis of the final step, which is the treatment of identified hazard risks.

The prioritization capability of the risk analysis process is significantly increased when it is performed in conjunction with supplemental methodologies. For instance, a vulnerability analysis can help to determine what is causing risks, why certain risks rank above others, and what can be done to increase resilience or decrease vulnerability through the various risk treatments identified in the fourth and final step.

Hazard vulnerability considers four distinct factors: social vulnerability, environmental vulnerability, physical vulnerability, and economic vulnerability. Hazards can also be prioritized according to the degree to which the at-risk population accepts them. For instance, despite the fact that more people are exposed to one particular hazard or that the hazard causes more fatalities or damages each year than any other, it might still be more palatable to the exposed population than another much less dangerous or damaging one. This is often due to real or perceived benefits that are associated with the existence of the hazard risk and which would be lost if the risk was partially or fully mitigated. For example, transportation accidents cause over 1 million fatalities each year, while accidents at nuclear power plants have resulted in far fewer than 10,000 across all the years that nuclear power has existed. Despite this contrast, there are very few people that oppose the use of automobiles while millions oppose nuclear power.

The SMAUG methodology is one of a number of systems developed to gage risk acceptability issues and to help risk managers further analyze previously-assessed risks along social, political, and other lines. SMAUG is an acronym that stands for five analytical factors including:

- Seriousness, or the relative impact on the community in terms of deaths, injuries, and damages
- Manageability, which refers to the ability of, or availability of options for, the community to manage the risk
- Acceptability, which investigates the willingness of the affected population to tolerate the existence of a particular hazard risk
- Urgency, which looks at how critical it is to safety and security that the risk immediately be addressed
- Growth, which refers to how quickly the hazard risk is increasing over time
- In recent years, SMAUG has been expanded to include two new factors:
- Frequency, which is typically addressed through the risk assessment process
- Awareness, which refers to the level to which different community stakeholders are informed about the hazard, and how closely their knowledge about the hazard reflects its true risk

The acceptability factor from the original SMAUG acronym was outrage, but still refers to the political and social acceptance of the hazard risk. The new acronym for this method is FSMAUGO.

Hazard risk treatment is the process by which either the likelihood of a disaster risk is reduced or eliminated or measures are taken to reduce the impacts of those hazard events that do actually occur. Hazard risks are treated through hazard mitigation and disaster preparedness (the topics of [Chapters 3](#): The Disciplines of Emergency Management: Mitigation and [Chapter 4](#): The Disciplines of Emergency Management: Preparedness, respectively). The selection of risk treatment options takes the risk assessment methodology beyond process to decision making and action. At this point, risk reduction options have been analyzed not only for their cost effectiveness but also for their acceptability by society and their long-term positive and negative impacts. The treatment process then becomes a technical and political one by which funds are finally dedicated, laws are changed or enacted and likewise enforced, and solutions are implemented.

Additional Research

FEMA-developed and released a series of “Mitigation How-To Guides” between 2002 and 2008 that explained and guided the hazard risk management process from inception to implementation for local community leaders. This nine-part series, available on the FEMA website, explains municipal HRM from building support for planning through using the Hazard Mitigation Plan to design and implement risk reduction projects. The guides can be found at: <http://1.usa.gov/1TQwDxf>. In 2011, the Department of Homeland Security released the Homeland Security Risk Management Doctrine titled *Risk Management Fundamentals*. This document was released in an attempt to standardize risk management throughout the department and to ensure that risk management was considered in relevant decisions and actions. This document can be found at: <http://bit.ly/1VnZk6u>.

Risk Management Technology

The nation's ability to track and manage hazards risks has significantly improved in the last 15 years. Through vast technological advancement, emergency managers are now much more capable of plotting hazards spatially, targeting the areas of greatest risk, and identifying and implementing appropriate risk reduction solutions.

Imaging and sensing technology, including satellite imagery and aircraft-based systems (such as radar, LIDAR, and FLIR), have given risk managers a much better visual representation of risk. These systems, and their associated information management and display systems, allow for spatial and temporal (time-based) representation of risk across whole communities and down to a level of granularity that allows consideration of risk on an individual property or structure. In doing so, the process of risk identification and the spatial plotting of hazard risk across risk zones has become much more tangible and, likewise, accurate.

Risk modeling systems, which include software such as the FEMA-developed HAZUS-MH (Hazards United States—MultiHazard) program and expert-based systems such as the products produced by the National Infrastructure Simulation and Analysis Center (NISAC—www.sandia.gov/nisac) and the US Army Corps of Engineers (<http://bit.ly/2fMKUOR>), allow not only predisaster estimation of impacts and response requirements but also early disaster estimation of likely damages and needs (before actual assessment data can be collected). The connectivity of the Internet has allowed for greater sharing of information and ideas across regions where similar problems are encountered and mitigated, and for risk estimation models to thus be generated.

The wide availability of GIS-based mapping software makes the plotting of risks and resources using layers of information that would have required much more significant resources to obtain only decades ago much easier today. Even commonly used web-based programs such as Google Earth have increased the ability of emergency managers with few resources to better understand the nature of the risk their communities face, including the plotting of floodplains and the proximity of various structures to known hazards. The research and scientific agencies of the federal government and the university community continue to develop new approaches to measuring, mapping, and predicting natural hazards. Since the Sep. 11, 2001, attacks, federal- and university-based funding dedicated to the advancement of emergency management technology has reached into the billions and is helping to develop even more methods to detect, understand, and treat natural, technological, and, most notably, terrorist hazards.

Social and Economic Risk Factors

It has long been recognized that a strong correlation exists between disasters and poverty. Because of several factors, including the inability to afford preparedness and mitigation measures, the lower rental and purchase costs associated with high-risk land and a general lack of knowledge concerning risk and its sources, the poor are more vulnerable to disasters and therefore find themselves repeatedly subject to them. While this is much more apparent in the developing countries, where the bulk of annual disaster deaths occur, risk factors based on poverty and social conditions also exist within countries.

In the United States, little has been done to address the social and economic factors of risk that make one group more vulnerable than another. Risk assessments have generally considered populations to be homogeneous for risk-planning purposes, thereby neglecting to address individual problems of certain social and economic groups that may not benefit as much, or at all, from the plans and capacities that are developed. Social advocacy groups have been working for years to raise awareness of the increased disaster vulnerability of “special populations” (which include, among others, the disabled, the elderly, the poor, children, and immigrants) with mixed success. However, Hurricane Katrina brought the reality of the socioeconomic vulnerability divide into every living room in the country via the mass media. Numerous social and political groups contend that it was poverty that caused Katrina’s high number of victims and that the poor shouldered an undue portion of the region’s risk, while the wealthy escaped relatively unharmed (a claim that was later refuted). Others called it a race disaster, claiming that the government neglected to bring about a more significant immediate response because a majority of the victims were African American. Regardless of the validity of these claims, it is clear that the majority of the people who failed to leave New Orleans did so because they lacked reliable transportation options, they were afraid to leave their property and possessions behind, or they had few to no resources with which to acquire shelter outside of the wide zone of risk. And in the aftermath of this disaster, these same social and economic risk factors impacted victims’ abilities to quickly and effectively recover.

A population’s social character is driven by a diverse set of factors that include education, culture, form and effectiveness of local government, standard of interaction, common values and beliefs, laws, and other aspects that define society. Within most communities, the hazard vulnerabilities of different groups vary due to a range of sociocultural factors that help or prevent individuals in those groups from taking mitigation or preparedness actions that provide protection. The effect of epidemics on different groups, and on people in different countries, is an example of a hazard whose event outcome is heavily influenced by social factors. Certain religious, cultural, or traditional practices and beliefs are other things that tend to reduce or exacerbate impacts by helping or hindering resilience drivers. For instance, religious beliefs that define disasters as being the “will of God” are more likely to negatively influence

mitigation and preparedness behaviors than those that promote the responsibility of individuals and governments to protect life from dangers that exist in the environment. And though it may not be evident to the people practicing such behaviors, the mitigation or preparedness actions they take may be the product of some previous social adjustment to a hazard. Disaster managers must be able to recognize when social interactions are either helping or hindering people in reducing their vulnerability to hazards, and they must also recognize what aspect of that social process is causing the alteration.

Financial status deeply affects a population's and its members' individual abilities to achieve protection from the consequences of disaster. Financial wellbeing, however, does not indicate that an individual or society *will* protect themselves; rather, it is just a measure of their ability to do so. There are other factors that may also be learned from the economic profile. For instance, the poor are often marginalized and forced to live on more dangerous land. Their housing is more likely to be constructed of materials that are unable to withstand environmental pressures. They are more likely to have zero tolerance to delays in basic necessities that often follow disasters.

When considering the definition of a disaster and the concept of vulnerability, it is easy to understand why the poor are more vulnerable. Because an event only becomes a disaster when the capacity to respond to the event is exceeded, requiring external assistance to manage the consequences, the poor—who survive on the brink of disaster each day—are much quicker to exhaust their resources when unforeseen events arise.

Critical Thinking

- Select a hazard that affects you or your community. Describe the characteristics of the hazard (how it would affect you or the community—including strong winds, ground shaking, etc.). Assess the risk associated with this hazard for you or your community, including the frequency of the hazard affecting you and the consequences if a disaster were to occur.
- What aspects of a community's geographic profile influence the hazards they face (e.g., proximity to a coast, slope of terrain)? What human practices influence these hazards (e.g., damming of rivers, filling in wetlands)? What natural processes influence these hazards (e.g., annual rainfall, temperature)?

Conclusion

In the HRM process, hazard identification is the foundational step in determining what preparative and preventive measures will be taken by a community. In other words, a community needs to know and understand their risks if they are to effectively manage them.

Through the monitoring of hazards, emergencies, and disasters that occur throughout the world, and through the conduct of research into the mechanism by which natural, technological, and intentional hazards operate, greater understanding of risk is being achieved. Societies are increasingly capable of managing low-likelihood, high-consequence events for which they have little or no experience—such as tsunamis or weapons of mass destruction. And for more common hazards, risk management is becoming a central aspect of not only the emergency management community but also the development and the private sector. Moreover, it has become accepted as good policy by a wide range of government agencies given the benefits of sustainability and economic stability it provides. Information is power, and armed with better information about hazards and their associated risk, societies are finding they have the power to act effectively in reducing or even eliminating many of the threats that have jeopardized their way of life.

Of course, all of these tools provide nothing without the acceptance of responsibility among those tasked with managing risk and leading the drive towards a more resilient society. The provision of hazard information and management tools to states and communities is but one necessary step in the risk reduction process. Success in risk management hinges upon the political buy-in and subsequent support of decision makers who must support not only the risk management effort itself, but also the recommendations that result. Oftentimes, the actions required are not popular among one or more groups and resistance or conflict is encountered. Emergency management is typically the organization best suited for providing the impetus for incorporating these considerations, popular or otherwise, into the planning and governing of our communities in the pursuit of safer, sustainable living.

It must be stressed that the existence of hazards will persist. Some, particularly technological hazards, may be reduced by our efforts, but our ability to control or eliminate natural hazards is questionable. Recent efforts to undo some of the former channelization and flood control projects undertaken by the US Army Corps of Engineers, once thought to be an effective measure to eliminate flood risk, are vivid examples of our inability to control nature. However, there is still a strong argument for an increased emphasis on improved science in hazard identification and increased financial support for hazards mapping, both of which have been effective components in community HRM efforts.

As our knowledge about hazards continues to expand, the economic and social logic of applying long-term solutions for reducing the risks posed by these hazards through mitigation and preparedness will gain momentum. The

cost-to-benefit ratios of mitigation and preparedness efforts will become more attractive to local decision makers, and, eventually, disaster losses will begin to fall substantially. However, each and all of these local successes will be wholly dependent on the ability of the emergency management professional to serve as a motivational champion for disaster risk reduction.

Important Terms

Avalanche
Blizzard
CBRN weapons
Coastal erosion
Dam failure
Disaster
Earthquake
Expansive soil
Extreme cold
Extreme heat
Flood
FSMAUGO
Hail
Hazard
Hazardous materials
Hazards risk management
Hurricane
Landslide
Lateral spread
Mass movement
Mudflow (or debris flow)
Natural hazard
Risk
Rockfall
Safe room
Severe winter storm
Storm surge
Technological hazard
Terrorism
Thunderstorm
Tornado
Tropical cyclone
Tropical storm
Tsunami
Volcano
Wildland fire (or wildfire)

Self-Check Questions

1. How is a hazard different from a disaster?
2. What is the most frequent and widespread disaster-causing hazard?
3. What scale is commonly used to describe the effects of earthquakes?
4. How are earthquakes measured?
5. Describe the process by which hurricanes form.
6. What scale is used to describe the intensity of hurricanes?
7. What are the various ways that hurricanes cause damage to a community?
8. What is a SLOSH model used to measure?
9. Why was the Fujita-Pearson Tornado Scale updated in 2006, and what changes were made?
10. What are the three categories of wildland fires?
11. How are severe weather storms measured?
12. What single disaster type caused nine of the top ten natural disasters ranked by FEMA relief costs?
13. What is the source of most hazardous materials incidents?
14. List and describe four categories of weapons of mass destruction.
15. What six steps are common to most risk assessment methodologies?
16. Name several of the social factors emergency managers must consider when assessing a community's risk.
17. What are some of the factors that make up a community's economic profile? How do these factors influence that community's disaster risk?
18. What is the purpose of the FSMAUGO methodology?

Out-of-Class Exercises

Visit FEMA's disaster declaration archive at <http://bit.ly/2fa2BEb>. View the disaster declarations for your state. Beginning with 1998 and moving forward to the present year, view the disaster declarations to determine what disasters affected your county. What hazards affected your county during this time? How many times did each occur? If possible, determine what assistance the federal government provided in response to the disaster.

The Disciplines of Emergency Management

Mitigation

Abstract

This chapter discusses the tools of mitigation, the impediments to mitigation, federal programs that support mitigation, and several case studies that demonstrate how these tools have been applied to successfully reduce various risks.

Keywords

Building codes; hazard identification; land-use planning; mitigation; structural controls and national mitigation framework

WHAT YOU WILL LEARN

- The variety of mitigation tools available to planners
- Impediments to mitigation and other associated problems
- Federal and nonfederal mitigation programs
- Mitigation methods in practice through specific case studies
- Introduction to the new National Mitigation Framework
- Innovative mitigation approaches from Hurricane Sandy

Introduction

Disasters are a reality of living in the natural world. Despite humans' attempts to control nature, which began with the early Egyptians and continue to today's massive flood-control efforts, natural hazard risk is something we continue to struggle with. Over the last two decades, the social and economic costs of disasters to the United States and throughout the world have grown significantly.

The causes of this growth are myriad. Climatological changes such as El Niño, global warming, and a rise in sea levels are some of the factors. When you add the effects of societal actions, such as increased development, deforestation and clear-cutting, the migration of populations to coastal areas, hydraulic fracturing, and the filling in of floodplains, you have total calamity. The trend toward ever more costly disasters continues. In 2015 alone there were at least 10 weather and climate disasters that each exceeded \$1 billion in costs, claiming over 150 lives and causing significant economic losses where they impacted. In 2015, FEMA issued 42 Presidential disaster declarations, 2 emergency declarations and 30 fire assistance declarations. Three years after Super Storm Sandy impacted New York and New Jersey, FEMA alone has provided over \$156 billion for recovery activities and over \$822 million for hazard mitigation grants.

Source: National Climatic Data Center and FEMA.

Mitigation, the means for reducing these impacts, is defined as a sustained action to reduce or eliminate the risks to people and property from such hazards and their effects. In our discussion of mitigation, we focus on natural hazards mitigation efforts and programs in the United States. We will examine some of the techniques for mitigation of technological hazards, but the body of knowledge and applications in this area are still evolving. Many of the successful natural hazards techniques such as building codes, however, can be applied to technological hazards.

The function of mitigation differs from the other emergency management disciplines because it looks at long-term solutions to reducing risk as opposed to preparedness for hazards, the immediate response to a hazard, or the short-term recovery from a hazard event. Mitigation is usually not considered part of the emergency phase of a disaster as in response or as part of emergency planning as in preparedness. The definition lines do get a little blurred regarding recovery. Applying mitigation strategies should be a part of the recovery from disaster (see [Chapter 7](#), The Disciplines of Emergency Management: Recovery), but even in this context, these are actions that will reduce the impact, or risks, over time.

The recovery function of emergency management still represents one of the best opportunities for mitigation, and until recently, this phase in a disaster plan provided the most substantial funding for mitigation activities. For a brief time, the trend had shifted toward greater federal spending on pre-disaster mitigation, but because of economic, federal budgetary, and political pressures,

mitigation has once again become an afterthought; a trend that is discussed later in this chapter.

Another thing that sets mitigation apart from the other disciplines of emergency management is the participation and support of a broad spectrum of players outside of the traditional emergency management circle. Mitigation involves land-use planners; construction and building officials, both public and private; business owners; insurance companies; community leaders; and politicians. The skills and tools for accomplishing mitigation (i.e., planning expertise, political acumen, marketing and public relations, and consensus building) are different from the operational, first-responder skills that more often characterize emergency management professionals. In fact, historically, emergency management professionals have been reluctant to take a lead role in promoting mitigation. To paraphrase a state director of emergency management, “I will never lose my job for failing to do mitigation, but I could lose my job if I mess up a response.”

With the exception of the fire community, whose members were early leaders in the effort to mitigate fire risks through support for building codes, code enforcement, and public education, the emergency management community has remained focused on their preparedness planning and response obligations. Throughout the decade of 2000, leadership at the federal level has supported these priorities through their funding, especially after the events of Sep. 11, where terrorism planning and preparedness were top priorities. Even in the aftermath of Hurricane Katrina, mitigation was not viewed as a programmatic imperative. Some exceptions, such as new federal mitigation programs supported to reduce exposure under the National Flood Insurance Program (NFIP) and more interest at the local level to apply mitigation post disaster, were evidenced. The rise in local initiatives is important because that is where mitigation can be the most effective in reducing future losses ([Fig. 3.1](#)). We also have noticed a trend emerging in the recovery from Sandy. In the mitigation projects proposed in New York and New Jersey, there is an increased emphasis on the application of structural controls to reduce future damages. With the emergence of the community resilience movement, it would be beneficial for the federal government to champion not only post disaster mitigation but also pre-disaster mitigation. To date, this has not happened, which has a ripple effect since state and local emergency managers traditionally reflect federal priorities in their actions. However, a recently proposed rule by FEMA would support and reimburse the repair of public facilities to the most current International Building Code (IBC) standards, which would be a significant improvement should the rule be implemented.



FIGURE 3.1 Stratford, Connecticut. December 6, 2012—These summer cottages are examples of homes not severely damaged by Hurricane Sandy due in large part to being elevated on pilings. FEMA is in the area with mitigation specialists who are knowledgeable about the value of pilings to support coastal homes. Photo by Marilee Caliendo/FEMA.

This chapter discusses the tools of mitigation, the impediments to mitigation, federal programs that support mitigation, and several case studies that demonstrate how these tools have been applied to successfully reduce various risks.

Mitigation Tools

Over the years, the United States has made great strides in reducing the number of deaths that occur in natural disasters. Through building codes, warning systems, and public education, the number of deaths and casualties from natural disasters in the last century has significantly declined. Economic effects and property damages, however, have escalated. Many people believe that these costs are preventable and that the tools required to dramatically reduce these costs are now available (Fig. 3.2).



FIGURE 3.2 Fairfield, Alabama, Jun. 20, 2014—FEMA Mitigation Community Education Outreach (OEC) specialists visit a hardware store in a disaster-affected community in Alabama in order to provide residents with technical assistance about mitigation options. Photo credit: Patsy Lynch, FEMA, Jun. 20, 2014.

Disasters caused by intentional hazards, such as the Oklahoma City bombing and the terrorist attacks of Sep. 11, 2001, are not as easy to analyze. There is much speculation about how improved intelligence and security could reduce the human effects of these disasters. From a property perspective, many people believe that some reduction in impacts could be achieved through application of traditional mitigation techniques such as improved building construction for blast effects. Other technological disasters such as the Valdez oil spill, the Three Mile Island emergency, and so on could have been prevented through better inspections, training, education, and exercises. These measures reflect good preparedness activities more than mitigation. In any case, further research and analyses are needed to answer the questions posed by the effects of terrorist events and similar technological hazards.

Most practitioners agree that the primary intent of mitigation is to ensure that fewer communities and individuals become victims of disasters. The goal of mitigation is to create economically secure, socially stable, better built, and more environmentally sound communities that are out of harm's way ([Fig. 3.3](#)). In today's vernacular we would call these creating more resilient communities.



FIGURE 3.3 Pass Christian, Ms., Sep. 27, 2005—This Pass Christian (MS) home, which is constructed of steel reinforced concrete and closely follows hurricane-specific FEMA building standards, was the only house in its neighborhood to survive when Hurricane Katrina struck. Most other homes in

the neighborhood were reduced to their foundations. Photo credit: John Fleck, FEMA, Sep. 27, 2005. Susie Shapira/FEMA.

The following mitigation tools are known to reduce risk:

- Hazard identification and mapping
- Design and construction applications
- Land-use planning
- Financial incentives
- Insurance
- Structural controls

Hazard Identification and Mapping

The hazard identification mitigation tool is fairly obvious. You can't mitigate a hazard if you don't know what it is or whom it affects. The most essential part of any mitigation strategy or plan is an analysis of what the hazards are in a particular area. The resources for hazard identification are numerous. The federal government has extensive programs that map virtually every hazard, and these products are available to communities. FEMA's NFIP provides detailed flood maps and studies, and the US Geological Survey (USGS) provides extensive earthquake and landslide studies and maps. Many state agencies have refined the products for hazard identification. For example, special soil stability studies and geological investigations, which are required in some parts of California, further refine this analysis.

Geographic information systems (GIS) have become ubiquitous and are staples for all local planning organizations. What is often missing from the available tools is the ability to superimpose the human and built environment onto the hazards, thereby providing a quantified level of risk. FEMA's HAZUS methodology, which was developed in the 1990s, has become a user-oriented tool for both state and local emergency managers to assess potential losses from floods, hurricanes, and earthquakes. Potential losses estimated in HAZUS include physical damage, economic loss, and societal impacts. This tool is also available to the private sector.

In 2014 Congress passed the Homeowner Flood Insurance Affordability Act (HFIAA) which involved numerous changes to the National Flood Insurance Program including changes to the mapping program including:

- Sec.30 which requires additional layers of enhanced notification and outreach to Congress and other stakeholders
- Enhanced authority to the Technical Mapping Advisory Council to review all mapping activities of the NFIP
- Provides exemptions from mapping fees under certain conditions
- Requires FEMA to consider the effects of non-structural flood control features (dunes, beach and wetland restoration) when it maps special flood hazard areas

Additional Research

FEMA's Multi-Year Plan outlines the goals, objectives, and strategies for Risk MAP and identifies the roles and responsibilities of stakeholders. It is available at <http://bit.ly/2fm7slV>.

Design and Construction Applications

The design and construction process provides one of the most cost-effective means of addressing risk. Building codes, architecture and design criteria, and soils and landscaping considerations govern this process. Code criteria that support risk reduction usually apply only to new construction, substantial renovation, or renovation to change the type or use of the building. Enactment of building codes is the responsibility of the states, and most state codes are derivatives of one of the three model codes, which reflect geographical differences across the United States. Some states delegate code adoption responsibility to more local governmental authorities. There are three major codes used across the United States. These are:

- Uniform Building Code
- BOCA National Building Code
- Standard Building Code
- International Building Code
- NFPA 5000 Building Code

Because of the cost, codes that require rehabilitation of existing potentially hazardous structures have been rarely implemented. The Los Angeles seismic retrofit ordinance is a rare example. The case study of the new design codes to decrease the impacts of wildfires in California, which have become an increasing threat, illustrates the importance of building codes to mitigation.

There is the potential for a significant enhancement in the adoption of improved building codes. On Apr. 21, 2016, FEMA issued a proposed rulemaking to establish minimum standards for projects eligible for receiving Public Assistance funds in the aftermath of receiving a Presidential disaster declaration. This proposed rule directs communities to use, at a minimum, the hazard resistant standards referenced in the International Building Code (IBC) for the restoration of damaged facility projects eligible for FEMA funding. Most importantly, the costs for meeting these standards would be eligible for reimbursement. Should this rule become policy it could have a dramatic impact on the resiliency of communities across the United States. However, while FEMA will pay for the upgrades, the cost share to the States and communities may preclude this rule from being finalized.

Additional Research

A copy of the proposed rule can be found at <http://bit.ly/2fCq16n>.

<http://bit.ly/2fJyyai>

Source: FEMA.gov. <http://bit.ly/2eCXT0A>.

Case Study: New Developments' Construction Standards Require Wildfire Mitigation

Rancho Santa Fe, California. More than 2460 multimillion-dollar houses that were constructed with the strictest construction standards possible, including expansive defensible space around and within the home development areas, survived extremely well when the Witch Fire stormed through the area in Oct. 2007.

The blaze burned up to plants on defensible spaces and stopped. Embers blown into areas of the estates bounced off tile roofs with boxed-in eaves, stucco walls, patios, and other areas and then died out without leaving more than incidental damage, mostly scorched plants. Although a half-dozen charred embers the size of footballs were found in the Cielo estates, according to Ken Crosby, one of the realtors for the estate areas, "Nothing was burned."

Five Rancho Santa Fe developments, completed just three-plus years before the Witch Fire, basically set construction standards on the "shelter-in-place" concept developed in Australia. The standards for construction and mitigation, including mandated interior fire sprinklers, extensive defensible space, and use of fire-resistant vegetation, are the "toughest in the country," according to Cliff Hunter, fire marshal for the Rancho Santa Fe Fire Protection District, which provides fire protection for the five developments.

The strict development standards also make these homes in the shelter-in-place communities' safer places to stay if the residents are unable to evacuate. Fire officials, however, advise people to evacuate rather than stay and try to fight the fires and to not get a false sense of security because their homes are considered to be a safe refuge.

The estate homes were constructed with materials and techniques intended to make the structures as resistant as possible to the effects of wild land fires. Only slow-to-ignite plants are planted near the homes. The standards are strictly maintained by the Rancho Santa Fe Fire Protection District's fire marshal.

The Sargentis' home is on the eastern edge of The Crosby, with a wide swath of defensible space adjoining the backyard. During the fire, smoke and ash entered their home through the drier vent, and the garage filled with smoke. The Sargentis explained that they had attended a program that explained how the shelter-in-place program worked. They learned that the concept had not been tested in the United States and that they should "get out early" if they chose to evacuate, as well as what to do if they stayed in their home.

When they learned that the fire was headed their way, they immediately left — well before the automatic alert that was sent to their house at 9 am that Monday morning. Steve Sargenti said he "knew the house was intact," and when the family returned; they found their house untouched, other than the smoke inside. Embers that had landed on the concrete tile roof had burned out, and the courtyard in front of the house "was a repository" for spent embers, Steve said.

Source: FEMA.gov. <http://bit.ly/2fmLfDl>.

Performance-based design and construction are becoming more critical, especially when building in earthquake-prone areas. This concept incorporates not just life safety requirements but continued use of the building in the aftermath of any disaster. In lieu of updated building codes, performance-based design can play a significant role in ensuring the viability of our built environment in the aftermath of a disaster.

The federal government has made a significant investment in developing technical guidance for improving the building and construction of structures in hazard areas, particularly earthquake-, wind-, and flood-prone areas. The International Code Council's (ICC) attempts to establish a single building code that would be adopted by local and state jurisdictions are moving forward and have experienced some success. The ICC is not promoting a National Code, as such, but there has been some discussion of developing a National Code to support mitigation efforts. Because the constitutional responsibility for public health and safety resides with the states, a National Code developed by the federal government is not politically feasible or practical.

Land-Use Planning

Mitigation programs are most successful when they are undertaken at the local level, where most decisions about development are made. The strategies for land-use planning offer many options for effecting mitigation, including acquisition, easements, storm water management, annexation, environmental review, and floodplain management plans. It also encompasses a myriad of zoning options such as density controls, special uses permits, historic preservation, coastal zone management, and subdivision controls.

Land-use planning was one of the earliest tools used to encourage mitigation. In 1968, Congress passed the National Flood Insurance Act that established the NFIP. This act required local governments to pass a floodplain management ordinance in return for federally backed, low-cost flood insurance being made available to the community. This act started one of the largest federal mapping efforts because the government promised local governments that they would provide them with the technical tools to determine where the floodplains were in their communities so they could steer development away from these areas. A more complete discussion of the NFIP can be found later in this chapter.

Moving structures out of harm's way through property acquisition is clearly the most effective land-use planning tool, but it is also the most costly. Following the Midwest floods of 1993, FEMA worked with Congress to make property acquisition more feasible by providing a substantial increase in funding for acquisition after a disaster. This is one of the mitigation programs that has flourished, with numerous communities working with their citizens to voluntarily agree to be moved out of harm's way in light of significant or repetitive flooding.

Land-use planning and ordinances can promote risk reduction in many other ways. The North Carolina coastal setback ordinance seeks to preserve the fragile and eroding coastlines of its barrier islands. The Alquist-Priola Act in

California limits development near known earthquake faults.

One of the best discussions and guidances on land-use impacts in the floodplains can be found in a document prepared by the Association of State Flood Plain Managers (ASFPM). The document is entitled, "No-Adverse Impact Guidance for Flood Plain Management," and is available at <http://bit.ly/2eZYzkt>.

Additional Research

In 2009, under a grant from the Mississippi Department of Marine Resources and with funding from the NOAA, the Gulf of Mexico Alliance published "Resilient Coastal Development through Land Use Planning: Tools and Management Techniques in the Gulf of Mexico." In creating the Governors' Action Plan II, Gulf Coast leaders recognized the importance of sustainable coastal development and its impact on the long-term health and resilience of our coastal communities. Specifically, this report (the report of the Gulf Coast Alliance) identifies ways to strengthen and enhance community resilience through land-use planning, recognizing that there are no one-size-fits-all solutions. This report begins by providing an overview of land-use planning and its key elements—comprehensive planning, zoning, and building regulation. From there, land-use management options for improving resilience are highlighted along with corresponding resources. Next, the report provides a discussion of incentives for improving the resilience of local land-use planning. The report concludes with guidance for conducting an audit to initiate next steps.

Source: <http://bit.ly/2eFdZY4>.

Case Study: Greenville County "Buys Down the Risk" With Property Acquisition Program

Greenville County, SC: Creeks can be deceiving. The unassuming, meandering bodies of water convey a sense of calm to passersby, and set scenes of solitude for the homeowner peering at its subtle wonder. Throughout history, communities have grown up around these bodies of water, resulting in thriving businesses and robust economies. But growth and development does not come without risks, and communities like Greenville County have learned to manage this risk in order to save lives and property, while ensuring future growth and prosperity for residents.

Greenville county Assistant Administrator, Paula Gucker, recalls the history behind the decision to build an increasingly aggressive property acquisitions program to minimize flood risk. "It started back in 1995 when Hurricane Jerry came through here," said Gucker. "It dumped 18.9 inches of rain over a fairly large part of the county of Greenville. It was the Brushy Creek/Gilder Creek area, and it dumped enough rain in such a short amount of time that there were numerous floods."

Although Gucker began working for the County in 2001, nearly 6 years after

the massive flood event, she became a proponent of sound floodplain management practices and progressive approaches to dealing with flooding. The county commissioned a Flood Task Force that reviewed the county's flood history, looking at where and why floods were occurring. One of the suggestions for dealing with flooding was to dredge Brushy Creek. However, property owners in the area were required to sign off on the plan. "We got about four houses down and people said they weren't signing," said Gucker. "They didn't want us there so the whole project dropped." The Flood Task Force was disbanded.

Between 2002 and 2004, Gucker and her staff reestablished the Flood Task Force, which recommended watershed studies, suggested different options for mitigating property in the floodplain, and different ways to strengthen the floodplain ordinance. "We looked at floodwalls, we looked at elevating homes, we looked at dredging the creeks, we looked at stream bank stabilizations," recalled Gucker. "But we knew from the engineering modeling we had done, that some of the properties were so deep in the floodway* at that time, that there wasn't much we could do. If we elevated them, we couldn't get them up high enough to get them out of the water."

As a member of the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP), Greenville County conducted detailed studies of the watershed and found that the amount of new development occurring upstream of Brushy and Gilder creeks was causing severe flooding during storm events. The new, detailed engineering studies conducted in coordination with FEMA and the South Carolina Department of Natural Resources determined the level of risk—low-to-moderate or high—for the entire county and identified floodways. The county then updated their flood damage prevention ordinance to eliminate building in the floodway. "It was a long process to do this," said Gucker. "We started with Brushy, because that was the worst of it. It took us 2 years to do the watershed study for Brushy. We finished it in 2007, and the final study was adopted by council. They asked that we look at doing this in every watershed, and look at how we were going to make sure nobody ever built in the floodplain without doing due-diligence. Property owners have to build 4 feet above the base flood elevation (BFE*), and they can't build in the floodway."

The county then began discussions regarding the acquisitions. Public meetings were held to get input from residents and property owners. Initially, the public had many concerns. "There were concerns that we were going to disconnect neighborhoods. There were concerns that we weren't going to pay property owners what their homes were really worth, that we were just going for a land-grab to get them out of there. In the meantime, we started researching who could help us with this," recalled Gucker.

After responding to residents' concerns, the county decided to move forward with property acquisitions. A request for proposals was released, and a contractor's bid was accepted. The acquisitions firm that Greenville County selected implemented a detailed and thoughtful approach to handling property acquisitions. Initially, people were upset during the community

planning meetings. "We got everybody in the room, and we sat up front and explained exactly how the process worked," said Gucker. "After we went through that first round in the two neighborhoods that we started in, word got out that this wasn't so bad, that it was a pretty good deal, the county was being really fair. Now when we have people come in to discuss buyouts, they're very calm, cool and collected, and they're like 'what took you so long?'"

Greenville County sets aside an estimated \$1–1.2 million per year for the annual acquisition of 10–12 homes. Some years they buy more, some years less. The buyouts are 100% county funded; the property owners pay nothing. "This is done through our storm water fee and our floodplain management program," says Gucker. "Now we have a FEMA grant to take care of some repetitive losses." To date, 166 homes have been acquired and 84.29 acres have returned to the floodplain as open space.

Opponents of property buyouts are often concerned about the impact on communities: dwindling tax base, change in neighborhood aesthetics, or loss of business growth opportunities. But the vast majority of Greenville County buyout participants remained within the unincorporated county and the area continues to thrive. "I only know of two people who moved out of the community," said Gucker. "One moved to be with family on the coast and the other moved out of state. Everyone else has relocated within Greenville County."

Greenville County serves as an example of a community that utilizes property acquisition and other tools in the floodplain management toolbox to protect its residents and property owners from the devastating effects of flooding. While some would shout from the rooftops about this tremendous level of success, county administrators remain humble. "We're very quiet," said Gucker. "We just don't toot our own horn. We probably should more," she adds.

For more information about the National Flood Insurance Program and to see if your property is located in a designated floodplain, visit:
<http://bit.ly/2e6ZGiR>.

**Floodways are the area in a high-risk flood zone where water is deepest and runs fastest.*

**BFE is the anticipated height floodwaters are expected to reach during the 1-percent-annual-chance flood (commonly referred to as the 100-year flood).*

Case Study: A Small Village with Big Concerns

Riverton, Illinois. The Sangamon River forms the west boundary of the Village of Riverton, a quaint community that 2997 residents call home. But the Village of Riverton has had a long flood history. To lessen the impact of floods on its residents, the village joined forces with other communities in Sangamon County to devise a plan. Acquisition was definitely the mitigation measure of choice, and council members have encouraged the creation of green space in the floodplain area. According to Linda Viola, office manager and grant

administrator for the Village of Riverton, "This was the second time these homes were hit. The first time was in 1994. We knew that something needed to be done."

Riverton is 550 feet above sea level. The village has a total area of 2.1 square miles: 2 square miles of land and 0.04 square miles of water (1.93%). Heavy rainfall causes the creek, which runs through the middle of Riverton, to frequently overtop its banks.

The Acquisition Project was initiated in Jul. 2002 and completed in Aug. 2006. Riverton received a grant totaling \$272,867.66 from FEMA through its Hazard Mitigation Grant Program (HMGP). HMGP pays 75% of approved projects that will prevent or reduce damage from storms and other natural hazards. These grants are made available for both public and private projects.

"We filled out all the grant information, and we notified the homeowners. They also knew that they had a choice," said Viola. "They could choose to participate or not. Participation is voluntary. We completed the project without any major problems. When you buy someone's home, they always think that it's worth more. There were some who disagreed with the appraisal. The properties were appraised a second time. The homeowner has a right to request a second appraisal."

Buyouts of flood-prone homes located near the Sangamon River began in Jul. 2004. The average value was \$75,000, and the total project cost was \$376,048.66. The village acquired six homes that were then demolished, resulting in open space within the floodplain.

A Jun. 2008 flood event tested the success of the acquisition project as waters from the Sangamon River crept upon the 140,506-acre tract of land. If those six homes had not been removed, they would have been flooded with 2-3 feet of water.

A local alderman contacted Ron Davis, the state hazard mitigation officer, who acknowledged, "It was great this year when the waters came up, [and we were] able to sit back and relax and not have to mobilize our forces to fight the flood." Said Viola, "Those [acquired] homes were in the floodplain. Flooding would continue to occur. I don't know how the people could have lived with the flood and continued to rebuild in the same area knowing that it would happen again. We found a way to help them."

Source: FEMA. <http://bit.ly/2fmLfDl>

Financial Incentives

The financial incentives tool is an emerging area for promoting mitigation. Among the approaches being used by localities to reduce risks are creating special tax assessments, passing tax increases or bonds to pay for mitigation, offering relocation assistance, and targeting federal community development or renewal grant funds for mitigation.

The economic effects of repetitive flooding led the citizens of Napa, California, and Tulsa, Oklahoma, to pass small tax increases to pay for flood-mitigation activities. In both cases, the tax had a minimal effect on the

community citizens but had a major effect in reducing the potential economic losses from future floods. Berkeley, California, has passed more than ten different bond issues to support seismic retrofit of public buildings, schools, and private residences.

Funding from the Community Development Block Grant (CDBG), a HUD program, has been used extensively to support local efforts at property acquisition and relocation. These funds have been used to meet the nonfederal match on other federal funding, which has often been a stumbling block to local mitigation. Other federal programs of the Small Business Administration (SBA) and the Economic Development Administration (EDA) provide financial incentives for mitigation.

Other emerging areas of financial tools include special assessment districts, impact fees, and transfer of development rights. All of these tools provide either incentives or penalties to developers as a means of promoting good risk-reduction development practices.

One of the newest approaches being applied today falls into the category of Neighborhood Development Floating Zones. This is a model ordinance designed to help local governments foster green community development by applying the Leadership in Energy and Environmental Design (LEED) rating system. By establishing a floating zone, this gives the private sector more flexibility to look at cost-effective options that can be agreed upon between local governments and the private sector to follow green development processes and mitigation options when a more extensive (and possibly) cumbersome and lengthy zoning process might be required.

The NFIP offers an interesting and rather indirect financial incentive under its Community Rating System (CRS) and will be discussed in the following section on Insurance. CRS is a voluntary part of the NFIP. What it provides is an incentive for communities to go beyond the minimum floodplain management requirements of the NFIP in exchange for a discount on the premiums that the citizens in that community and facilities must pay for their NFIP insurance coverage. The program started in 1990 as a way to encourage communities to reduce the flood damage to their insurable properties and support the insurance aspects of the NFIP. There are well over 20,000 communities that participate in the NFIP and about 1200 of these communities have taken advantage of the benefits of the CRS. A case study of one such county is found later in this chapter under insurance.

When municipalities are faced with issues such as increasing costs or a decrease in federal and state funding, one of the methods used to close the gap is the implementation of impact fees. Impact fees are assessed to generate revenue to meet local infrastructure and public facility demands arising as the result of new development. Municipalities will assess impact fees upon the construction of new developments, which include apartments, single-family homes, and commercial developments. Impact fees are typically paid at the time the building permit or certificate of occupancy is issued, and are based generally upon the characteristics of the specific parcel (square footage, number of bedrooms, number of living units, a percentage of the project's fair market

value, etc.). By making the fees parcel-specific, a closer correlation between impacts and assessments is provided. Impact fees can be used to fund a variety of services and facilities, and are not limited to infrastructure within the development.

FEMA has provided the following guidance on the application of impact fees: "While more than half the states allow the assessment of impact fees, they are often subject to various regulations. In cases where there is a lack of specific state statutory authority, the focus will shift to whether the impact fee is a regulatory fee derived from the community's land use authority and used specifically to regulate land use, or whether it constitutes an unauthorized tax that is being used to raise general revenues. With certain limitations, impact fees may be used in Alabama, Florida, Louisiana, and Texas. However, Mississippi does not currently allow the use of impact fees. An example of using impact fees to support local resilience can be seen in Texas, where impact fees may be used to fund storm water management and flood control improvements associated with new development".

Case Study: Napa River Flood Protection Project

Napa, California. In the flood-prone valley of the Napa River lies the world-class traveler's destination of Napa, California. Over the span of 36 years (1961–97), a total of 19 floods caused more than \$542 million in residential property damage alone. That total does not include economic losses in the tourism industry, environmental damage, or the loss of human lives.

During a 1986 flood, 20 inches of rain fell in a 48-hour period, resulting in three deaths, the destruction of 250 homes, damage to 2500 homes, and the evacuation of 5000 residents. Flood events in Mar. 1995 and Jan. 1997 were similarly destructive. The City of Napa subsequently embarked on an ambitious effort to mitigate flood losses in the community.

The Napa River–Napa Creek Flood Protection Project was voted into reality by the passage of Napa County Measure A in Mar. 1998. This half-cent local sales tax levy passed by the citizens of Napa County provided a funding mechanism for the local share of the project cost and helped solidify the partnership between the Napa County Flood Control and Water Conservation District (NCFCWCD) and the US Army Corps of Engineers.

Measure A funds flood protection, drainage improvements, dam safety, and watershed management projects for each community in Napa County and in the unincorporated area of the county. The project was still ongoing in 2006 and components include the following: The acquisition and removal of more than 50 mobile homes, 16 residences, and 28 commercial buildings from flood-prone areas; the creation of more than 400 acres of emergent marsh and 150 acres of seasonal wetlands; the removal, reconstruction, and elevation of several bridges; the elevation of railroad tracks; home and utilities elevations; the creation of structural flood control elements such as widened stream beds, flood walls, levees, and culverts; and the construction of three detention basins

with accompanying pump stations. According to NCFCWCD, "When all these project components are in place, the City of Napa will have a system to keep homes and businesses dry in the future."

December 2005 was the first test of Napa County's new flood mitigation efforts when nearly 10 inches fell in a 24-hour period. Local officials were ready for the flood and had already placed sandbags and warned residents. Within 4 days of the flood the city had placed debris containers around town, which greatly facilitated cleanup and repair. At the time of the Dec. 2005 floods, officials estimated that the project was only 40% completed. Nevertheless, significant economic losses were avoided. A sense of confidence in the economic vitality of the City of Napa is evidenced by an all-time high in construction activity for the residential and commercial sectors, the opening of four new downtown restaurants, the proposal for three new hotels, and an increase in commercial assessment in the downtown area. In addition to mitigating flood losses, the community has placed a revitalized, healthy river as the centerpiece of Napa. Many people now take advantage of the resources the river has to offer, including fishing, boating, walking along river trails, bird watching, and scenic dining. For up-to-date information on flood mitigation activities in Napa County, please visit the Napa County Flood Control and Water Conservation District website.

Source: FEMA. <http://bit.ly/2fmLfDl>.

Wildfires are becoming an ever-increasing risk impacting so many more communities than in previous decades as development pressures have increased the geographic areas that are threatened by an urban/wildfire interface risk. The National Fire Protection Association (NFPA) has been working on this issue through its research Foundation. Their publication entitled, "Addressing Community Wildfire Risk: A Review and Assessment of Regulatory and Planning Tools," provides excellent guidance on what options exist for communities to address this increasing problem. This publication is available at <http://bit.ly/2eteTti>.

Insurance

Some people would argue with the inclusion of insurance as a mitigation tool. Their reasoning is that insurance by itself really only provides for a transfer of the risk from the individual or community to the insurance company. Although this is true, the NFIP is the prime example of how, if properly designed, the insurance mechanism can be a tool for mitigation. The NFIP is considered to be one of the most successful mitigation programs ever created.

Congress created the NFIP in response to the damages from multiple severe hurricanes and inland flooding and the rising costs of disaster assistance after these floods. At that time, flood insurance was not readily available or affordable through the private insurance market. Because many of the people being affected by this flooding were low-income residents, Congress agreed to subsidize the cost of the insurance so the premiums would be affordable. The

idea was to reduce the costs to the government of disaster assistance through insurance. The designers of this program, with great insight, thought the government should get something for their subsidy. So in exchange for the low-cost insurance, they required that communities pass an ordinance directing future development away from the floodplain.

The NFIP was designed as a voluntary program and, as such, did not prosper during its early years, even though flooding disaster continued. Then in 1973, after Hurricane Agnes, the legislation was modified significantly. The purchase of federal flood insurance became mandatory on all federally backed loans. In other words, anyone buying a property with a Veterans Administration (VA) or Federal Housing Administration (FHA) loan had to purchase the insurance. Citizen pressure to buy the insurance caused communities to pass ordinances and join the NFIP. The NFIP helped the communities by providing them with a variety of flood hazard maps to define their flood boundaries and set insurance rates.

The 1993 Midwest floods triggered another major reform to the NFIP. This act strengthened the compliance procedures. It told communities that if they didn't join the program, they would be eligible for disaster assistance only one time. Any further request would be denied. As a positive incentive, the act established a Flood Mitigation Assistance (FMA) fund for flood planning, flood mitigation grants, and additional policy coverage for meeting the tougher compliance requirements such as building elevation.

Over the years, the NFIP has created other incentive programs such as the Community Rating System. CRS is a voluntary part of the NFIP. What it provides is an incentive for communities to go beyond the minimum floodplain management requirements of the NFIP in exchange for a discount on the premiums that the citizens in that community and facilities must pay for their NFIP insurance coverage. The program started in 1990 as a way to encourage communities to reduce the flood damage to their insurable properties and support the insurance aspects of the NFIP. There are well over 20,000 communities that participate in the NFIP and about 1200 of these communities have taken advantage of the benefits of the CRS.

Case Study Earning Points Towards Savings: Charleston County's CRS Efforts Pay Off for Residents

Charleston County, SC: Carl Simmons is the Director of Building Services for unincorporated Charleston County, and he is on a mission. Simmons leads the effort to ensure that property owners in his community benefit from the Community Rating System (CRS), a program initiated by the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP) in 1990. The CRS was designed to reward property owners in NFIP participating communities by offering reductions in the costs of their flood insurance premiums.

Built on a ranking system, participating communities earn points for performing a variety of activities, from some as simple as providing educational materials to the public all the way up to undertaking complex flood mitigation actions. There are 10 levels of participation (with level 1 being the highest and 10 the lowest, earning no points) and for each subsequent level of rating achieved a 5% reduction in flood insurance rates within that community is awarded. Reductions range from 5% for the most basic participation at level 9 up to a maximum reduction of 45% for those communities reaching a level 1 rating.

"We were doing these kinds of things before the CRS was ever begun," said Simmons. "We had a Hazard Mitigation Plan before the federal government required one. In my work, it's just something I've always believed. The more you can establish a standard that everyone goes by, or better yet raise those standards, the better off everyone will be."

In addition to a 30-year tenure as Director of Building Services for unincorporated Charleston County, Simmons also serves as the NFIP Coordinator, Fire Official and CRS Coordinator, not only for Charleston County but for several of the smaller communities that lie within its borders, such as the towns of Hollywood, Awendaw and Ravenel, among others. It has been his goal since the beginning of his tenure to do everything in his power to ensure the safety and security of his fellow citizens.

Charleston County joined the CRS in 1994. After meeting the qualifying requirements they entered the program with a rating of 9, which yielded the basic 5% reduction in flood insurance costs. In less than a year, however, through Simmons' and his staff's efforts, they had accumulated enough points to begin elevating their community's rating and they've kept on going from there. To date, unincorporated Charleston County has managed to raise its CRS level to a 4, one of only four communities in the nation to achieve this elite status. The current rank in CRS nets a 30% reduction to their flood insurance premiums, and Simmons is certain that in 2016 they will have amassed enough points to reach a rating of 3.

On average, homeowners benefiting from Charleston County's CRS efforts see a savings of \$223 per year. While that dollar figure might not seem like a particularly significant amount individually, in total, across Charleston County and the communities that participate under the umbrella of Simmons' office, the total reductions amount to an impressive \$13+ million annually in savings.

Points are awarded to CRS participating communities based on three criteria: actions that reduce flood damage to insurable property; strengthening and supporting the insurance aspects of the NFIP; and encouraging, as well as enforcing as much as possible, a comprehensive floodplain management strategy. Simmons and his staff aggressively pursue activities within all three of these categories.

The biggest push that Simmons and his staff have undertaken has been through establishing higher regulatory standards for construction throughout their communities. It was in this area that they have earned the most significant amount of points towards their CRS rating. Communities seeking to

enforce higher regulatory standards can implement guidelines that minimize the impact of new construction on the floodplain, such as requiring the use of compensatory water storage (basically providing an equal amount of water storage area to offset any amount of fill that is placed within the floodplain). Similar efforts include requiring stricter standards for coastal construction or the use of engineered foundations, among other activities.

Prior to 2015, for example, Charleston County required at least one foot of freeboard (an additional elevation of any building above the Base Flood Elevation (BFE)), added to all new construction, or to any building undergoing significant renovation or reconstruction within the floodplain. In keeping with their pursuit of higher regulations, Charleston County has recently raised its required freeboard level to two feet, which not only results in reduced flood insurance premiums for individual homeowners on a case-by-case basis, but also provides them with additional points towards their overall CRS score.

For communities considering joining the CRS, or for participating communities hoping to elevate their ranking, Simmons advocates tenacity and thick skin.

"When starting something like this, like pushing for higher regulations, don't expect that pat on the back," Simmons said. "It takes a lot of commitment. First of all, you have to have the support of the local government body. There's a way to present it to them. Start small, and build. Secondly, don't overlook any of it. I don't want to miss one point, as long as it's necessary. Finally, your staff must be community service-oriented. Strong customer service is vital. There are a lot of things you can do to build support. Ultimately, the key is not to worry about what you did today, but what you're going to have to do tomorrow."

If you would like to find out if your community participates in the CRS, or are interested in getting your community involved in the program, talk to your local floodplain manager. More information on the NFIP and the CRS is available at the following website: <http://bit.ly/2e6ZuAj>

Source: FEMA <http://bit.ly/2fAvfTA>.

The NFIP represents one of the best public/private partnerships. Through the Write Your Own program, private insurers are given incentives to market and sell flood insurance.

Today more than 20,000 communities in the NFIP have mitigation programs in place. Other attempts have been made to duplicate this program for wind and earthquake hazards, but these have not received the support necessary to pass in Congress. If another major earthquake occurs, the issue of creating a federally supported earthquake or all-hazards insurance will resurface.

Major disasters commonly instigate changes within the national and international private insurance industries, as firms attempt to adjust operations such that they are able to continue profitable operations according to newly acquired hazard information. Industry changes resulting from the 9/11 terrorist events, which focused solely on damages caused by a perceived "long-shot" subsequent terrorism incident, focused on the availability of specialized

terrorism insurance (and affected mainly a business clientele). However, Hurricane Katrina, which ranked as the costliest US disaster, with approximately \$40 billion to \$55 billion in insured losses, has resulted in new changes whose impacts are just beginning to be understood and that are expected to profoundly affect the ever-growing coastal populations who depend on insurance coverage for financial security.

The insurance industry was lambasted during the recovery from Hurricane Katrina when it was reported that victims often faced long delays in receiving their insurance checks or, even worse, were informed that their insurance coverage did not apply to the type of damage that was caused by the hurricane (many victims found themselves without coverage when it was determined that their damages were not caused by wind, which was covered in their policies, but rather by the excluded storm surge hazard). Class action lawsuits gave many of these Gulf Coast victims some recourse, but they have in turn caused the insurance industry to reconsider whether risk assessments of coastal areas are still valid if insurers are being mandated to pay damages on events their original calculations did not consider. As a result, the insurance industry has steadily withdrawn their coverage from many of these Gulf Coast areas and in coastal areas as far away as Connecticut, Rhode Island, and Massachusetts, claiming that new conditions brought about by the lawsuits would require them to raise premiums to unaffordable levels. State Farm Insurance, the nation's largest residential insurer and one of the largest companies operating on the Gulf Coast (which paid over \$1 billion in claims in Mississippi alone following Katrina), has refused to renew policies that cover homes within 1000 feet of the water. Allstate Insurance Company has canceled or refused renewed coverage in a dozen coastal states.

Hurricanes Katrina and Rita and a series of major floods had a devastating impact on the National Flood Insurance Fund. The inability of the NFIP to set rates that were actuarially sound combined with the grandfathering in of hundreds of coastal communities and several years of major storms left the program significantly in the red and borrowing heavily from the US Treasury to meet claims payments. After Katrina, it was at a point where FEMA was simply able to pay the interest on the US Treasury loans as the principle continued to climb. As a result of a series of hurricanes and major floods (Ike, Irene, Kansas, Cedar Rapids, etc.), Congress began an extensive re-examination of the NFIP. This resulted in dramatic changes to the way the NFIP is to function in the future.

In 2012, the US Congress passed the Flood Insurance Reform Act of 2012 that calls on FEMA and other agencies to make a number of changes to the way the NFIP is run. As the law is implemented, some of these changes have already occurred, and others will be implemented in the coming months (Congress has delayed implementation of certain provisions of the legislation until 2014). Key provisions of the legislation will require the NFIP to raise rates to reflect true flood risk, make the program more financially stable, and change how Flood Insurance Rate Map (FIRM) updates impact policyholders. The changes will mean premium rate increases for some, but not all, policyholders over time.

Biggert-Waters Flood Insurance Reform Act of 2012

Impact of National Flood Insurance Program (NFIP) Changes

Note: This Fact Sheet deals specifically with Sections 205 and 207 of the Act.

In 2012, the US Congress passed the Biggert-Waters Flood Insurance Reform Act of 2012 that calls on the Federal Emergency Management Agency (FEMA) and other agencies to make a number of changes to the way the NFIP is run. Some of these changes have already been put in place, and others will be implemented in the coming months (Congress has delayed implementation of certain provisions of the legislation until 2014). Key provisions of the legislation will require the NFIP to raise rates to reflect true flood risk, make the program more financially stable, and change how Flood Insurance Rate Map (FIRM) updates impact policyholders. The changes will mean premium rate increases for some, but not all, policyholders over time.

What This Means

The new law encourages Program financial stability by eliminating some artificially low rates and discounts. Most flood insurance rates will now move to reflect full risk, and flood insurance rates will rise on some policies.

Actions such as buying a property, allowing a policy to lapse, or purchasing a new policy can trigger rate changes. You should talk to your insurance agent about how changes may affect your property and flood insurance policy. There are investments you and your community can make to reduce the impact of rate changes. And FEMA can help communities' lower flood risk and flood insurance premiums.

What Is Changing Now?

Most rates for most properties will more accurately reflect risk. Subsidized rates for non-primary/secondary residences are being phased out now. Subsidized rates for certain other classes of properties will be eliminated over time, beginning in late 2013. There are several actions that can trigger a rate change, and not everyone will be affected. It's important to know the distinctions and actions to avoid, or to take, to lessen the impacts.

Not everyone will be affected immediately by the new law—**only 20% of NFIP policies receive subsidies**. Talk to your agent about how rate changes could affect your policy. Your agent can help you understand if your policy is impacted by the changes.

- Owners of subsidized policies on **nonprimary/secondary** residences in a Special Flood Hazard Area (SFHA) will see a 25% increase annually until rates reflect a true risk—began Jan. 1, 2013.
- Owners of subsidized policies on **property that has experienced severe or repeated flooding** will see a 25% rate increase annually until rates reflect a true risk—beginning Oct. 1, 2013.
- Owners of subsidized policies on **business/nonresidential properties in a**

Special Flood Hazard Area will see a 25% rate increase annually until rates reflect a true flood risk—beginning Oct. 1, 2013.

(Each property's risk is different. Some policyholders may reach their true risk rate after a couple years of increases, while other policyholder increases may go beyond 5 years to get to the full risk rate required by the new law. Rate tables on true risk will not be available until Jun. 2013.)

Primary residences in SFHAs will be able to keep their subsidized rates unless or until:

- The property is sold;
- The policy lapses;
- You suffer severe, repeated, flood losses; or
- A new policy is purchased.

Congress basically put this act on hold after constituents complained of premium increases of over 150% and various other problems and slowed the timetable for implementation. In the meantime, the impacts of Super Storm Sandy resulted in a different piece of legislation being enacted.

Source: Apr. 2013. FEMA. <http://bit.ly/2fADi2m>.

FEMA and the NFIP became embroiled in scandal in the aftermath of Sandy when there were serious allegations brought forth that the inspectors and the claims adjusters who were servicing NFIP claims in the aftermath of Sandy were not doing a fair job in estimating the damage and were minimizing the claims. In response to Congressional and media pressure, FEMA launched a review and found that three out of five of the eligible policyholders had not received appropriate payments. FEMA then offered each policyholder to ask for a review of their claim.

Concurrently, Congress passed the Homeowner Flood Insurance Affordability Act (HFIAA) of 2014 that focused on other changes, mostly on fees, rates and surcharges that it wanted FEMA to implement. This legislation dramatically slowed the elimination of subsidies called for under Biggert-Waters and amended many of the provisions of that legislation.

Additional Research



FEMA

Homeowner Flood Insurance Affordability Act

Overview

On March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act of 2014 into law.

This law repeals and modifies certain provisions of the Biggert-Waters Flood Insurance Reform Act, which was enacted in 2012, and makes additional program changes to other aspects of the program not covered by that Act. Many provisions of the Biggert-Waters Flood Insurance Reform Act remain and are still being implemented.

While FEMA actively works to implement the new law, we encourage policyholders to maintain and keep current flood insurance policies. FEMA does NOT recommend cancelling a flood insurance policy. Cancelling flood insurance policies now will leave policyholders unprotected during spring flooding and may cause policyholders to lose important discounts on their rate if they reinstate in the future.

- The new law lowers the recent rate increases on some policies, prevents some future rate increases, and implements a surcharge on all policyholders. The Act also repeals certain rate increases that have already gone into effect and provides for refunds to those policyholders. The Act also authorizes additional resources for the National Academy of Sciences (NAS) to complete the affordability study.
- FEMA looks forward to working with Congress, the private Write Your Own insurance companies, and other stakeholders to implement these Congressionally mandated reforms and to working toward our shared goals of helping families maintain affordable flood insurance, ensuring the financial stability of the NFIP, and reducing the risks and consequences of flooding nationwide. FEMA will also continue to identify and publish special flood hazards and flood risk zones as authorized and required by Congress.
- FEMA has actively begun analyzing and prioritizing implementation of the new law. We will be working with the private Write Your Own insurance companies in the next few weeks to seek their input and expertise prior to issuing business practice bulletins.
- It is not possible for changes to happen immediately. While the new law does require some changes to be made retroactively, applying to certain policies written after July 6, 2012, other changes require establishment of new programs, processes and procedures.
- FEMA's initial priority is assessing potential changes to the NFIP's business processes to stop policy increases for certain subsidized policyholders as outlined in the Act.
- FEMA also plans to issue guidance in the months ahead for the Write Your Own insurance companies to begin issuing refunds as outlined in the law for some policyholders who were previously impacted by subsidy phase outs.
- More information on the new law and its impacts on the NFIP will be forthcoming.

REFUNDS

- For certain flood insurance policies affected by the Pre-Flood Insurance Rate Map (Pre-FIRM) subsidy elimination required by BW-12, the new law mandates refunds of the excess premiums that those policyholders were charged pursuant to the requirements of BW-12. Refunds will not affect all subsidized policyholders who received rate increases as directed by Congress in BW-12, only policyholders for whom the rate increases under BW-12 were revoked by the new law. Refunds will affect only a small percentage of the overall NFIP policy base.
 - Prior to restoring and refunding premiums, FEMA is required by the Homeowner Flood Insurance Affordability Act to consult with its partner insurers (Write-Your-Own insurance companies or WYOs) to develop guidance and rate tables.
 - In accordance with the new law, FEMA will work to develop and finalize its guidance and rate tables within eight months.
 - The law provides WYO insurance companies between six and eight months to implement the changes and update systems to implement the guidance.
- FEMA is working closely with the WYO insurance companies to develop a timetable for processing refunds expediently.
- **REFUNDS APPLY TO:**
 - Policyholders in high-risk areas who were required to pay their full-risk rate after purchasing a new flood insurance policy on or after July 6, 2012.
- **REFUNDS MAY APPLY TO:**
 - Policyholders who renewed their policy after the Homeowner Flood Insurance Affordability Act was enacted on March 21, 2014 and whose premium increased more than 18 percent .
- **REFUNDS DO NOT APPLY TO:**
 - Policyholders paying the 25 percent annual rate increases, as required by Congress in BW-12, for a Pre-FIRM subsidized non-primary residence, business, Severe Repetitive Loss property, or building that was substantially damaged or improved.
 - Policyholders whose full-risk premium is less than the Pre-FIRM subsidized premium, or who were not overcharged according to any retroactive revisions to the Pre-FIRM subsidized rates required by the new law.
- Policyholders who saw usual, annual rate increases in 2013 or 2014, or policyholders who paid the 5 percent fee, as required by BW-12, for the NFIP Reserve Fund, will only see a refund if their premium renewal was after March 21, 2014 and their total premium, including the reserve fund, exceeded 18 percent.

PREMIUM RATES FOR SUBSIDIZED POLICIES

- The new law requires gradual rate increases to properties now receiving artificially low (or subsidized) rates instead of immediate increases to full-risk rates required in certain cases under BW-12.
- FEMA is required to increase premiums for most subsidized properties by no less than 5 percent annually until the class premium reaches its full-risk rate. It is important to note that close to 80 percent of NFIP policyholders paid a full-risk rate prior to either BW-12 or HFIAA, and are minimally impacted by either law.
- With limited exceptions flood insurance premiums cannot increase more than 18 percent annually.
 - There are some exceptions to these general rules and limitations, The most important of these exceptions is that policies for the following properties will continue to see up to a 25 percent

annual increases as required by BW-12 until they reach their full-risk rate: Older business properties insured with subsidized rates;

- Older non-primary residences insured with subsidized rates;
- Severe Repetitive Loss Properties insured with subsidized rates;
- and buildings that have been substantially damaged or improved built before the local adoption of a Flood Insurance Rate Map (known as Pre-FIRM properties).

- In order to enable new purchasers of property to retain Pre-FIRM rates while FEMA is developing its guidelines, a new purchaser will be allowed to assume the prior owner's flood insurance policy and retain the same rates until the guidance is finalized. Also, lapsed policies receiving Pre-FIRM subsidized rates may be reinstated with Pre-FIRM subsidized rates pending FEMA's implementation of the rate increases required by the Homeowner Flood Insurance Affordability Act.

NEW SURCHARGE ON ALL POLICIES

- A new surcharge will be added to all policies to offset the subsidized policies and achieve the financial sustainability goals of BW-12. A policy for a primary residence will include a \$25 surcharge. All other policies will include a \$250 surcharge. The fee will be included on all policies, including full-risk rated policies, until all Pre-FIRM subsidies are eliminated.

GRANDFATHERING

- The new law repeals a provision of BW-12 that required FEMA, upon the effective date of a new or updated Flood Insurance Rate Map, to phase in premium increases over five years by 20 percent a year to reflect the current risk of flood to a property, effectively eliminating FEMA's ability to grandfather properties into lower risk classes.
- Also for newly mapped in properties, the new law sets first year premiums at the same rate offered to properties located outside the Special Flood Hazard Area (preferred risk policy rates).
- With limited exceptions, flood insurance premiums cannot increase more than 18 percent annually.

FLOOD INSURANCE ADVOCATE

- The new law requires FEMA to designate a Flood Insurance Advocate to advocate for the fair treatment of NFIP policy holders.
- The Advocate will:
 - Educate property owners and policyholders on individual flood risks; flood mitigation; measures to reduce flood insurance rates through effective mitigation; the flood insurance rate map review and amendment process; and any changes in the flood insurance program as a result of any newly enacted laws;
 - Assist policy holders and property owners to understand the procedural requirements related to appealing preliminary flood insurance rate maps and implementing measures to mitigate evolving flood risks;
 - Assist in the development of regional capacity to respond to individual constituent concerns about flood insurance rate map amendments and revisions;
 - Coordinate outreach and education with local officials and community leaders in areas impacted by proposed flood insurance rate map amendments and revisions; and

- Aid potential policy holders in obtaining and verifying accurate and reliable flood insurance rate information when purchasing or renewing a flood insurance policy.

OTHER PROVISIONS

- The new law permits FEMA to account for property specific flood mitigation that is not part of the insured structure in determining a full-risk rate.
- The law requires that residential basement floodproofing be considered when developing full-risk rates after a map changes increasing the Base Flood Elevation in an area where residential basement floodproofing is permitted.
- The law mandates that FEMA develop an installment plan for non-escrowed flood insurance premiums, which will require changes to regulations and the Standard Flood Insurance Policy contract.
- The law increases maximum deductibles.
- The law encourages FEMA to minimize the number of policies where premiums exceed 1-percent of the coverage amount, and requires FEMA to report such premiums to Congress.

DRAFT AFFORDABILITY FRAMEWORK

- The new law requires FEMA to prepare a draft affordability framework, which is due to Congress 18 months after completion of the affordability study required by BW-12. The Affordability Study required by BW-12 is underway and is being conducted by the National Academies of Sciences, as specified in the BW-12 law.
- In developing the affordability framework, FEMA must consider:
 - accurate communication to customers of the flood risk,
 - targeted assistance based on financial ability to pay,
 - individual and community actions to mitigate flood risk or lower cost of flood insurance,
 - the impact of increases in premium rates on participation in NFIP,
 - and the impact of mapping update on affordability of flood insurance.
- The affordability framework will include proposals and proposed regulations for ensuring flood insurance affordability among low-income populations.

MAPPING

- The Homeowner Flood Insurance Affordability Act requires the Technical Mapping Advisory Council (TMAC) to review the new national flood mapping program authorized under the 2012 and 2014 flood insurance reform laws. The law requires the Administrator to certify in writing to Congress that FEMA is utilizing “technically credible” data and mapping approaches. The law also requires FEMA to submit the TMAC review report to Congress.
- FEMA will be looking to the TMAC for recommendations on how best to meet the legislatively mandated mapping requirements for the new mapping program including the identification of residual risk areas, coastal flooding information, land subsidence, erosion, expected changes in flood hazards with time, and others.

- As the new national flood mapping program is being established, FEMA expects there will be opportunities to make incremental improvements to current procedures as it provides flood hazard data and information under the National Flood Insurance Program (NFIP). FEMA will make those improvements where necessary to ensure all ongoing changes to flood hazards continue to be effectively communicated, mitigated, and properly insured against.
- The law lifts the \$250,000 limit on the amount that FEMA can spend to reimburse homeowners for successful map appeals based on a scientific or technical error. Federal rulemaking is required in order to implement this provision.
- FEMA is authorized to account for reconstruction or improvements of flood protection, not just new construction. It authorizes FEMA to consider the existing present value of a levee when assessing adequate progress for the reconstruction of an existing flood protection system. The law extends certain provisions related to NFIP requirements in areas restoring discredited flood protection systems to coastal levees and clarifies that the levee needs to be considered without regard to the level of federal funding for the original construction or the restoration.
- The law exempts mapping fees for flood map changes due to habitat restoration projects, dam removal, culvert re-design or installation, or the installation of fish passages.
- The law requires FEMA to consider the effects of non-structural flood control features, such as dunes, and beach and wetland restoration when it maps the special flood hazard area.
- The law requires FEMA to enhance coordination with communities before and during mapping activities and requires FEMA to report certain information to members of Congress for each State and congressional district affected by preliminary maps.

###

Structural Controls

Structural controls are controversial as a mitigation tool. Structural controls usually have been used to protect existing development. In doing so, they can have both positive and negative effects on the areas they are not protecting. In addition, as the name implies, they are used to control the hazard, not reduce it. Invariably, as was seen so graphically in the Midwest floods, the structures lose control and nature wins; however, in some circumstances, structural controls are the only alternative.

The most common form of structural control is the levee ([Fig. 3.4](#)). The US Army Corps of Engineers has designed and built levees as flood-control structures across the United States. Levees are part of the aging infrastructure of America. As mitigation tools, they have obvious limitations. They can be overtopped or breached, as in the 1993 Midwest floods; they can give residents a false sense of safety that often promotes increased development; and they can exacerbate the hazard in other locations. After the 1993 floods, a major rethinking of dependency on levees has occurred. Efforts are being made to acquire structures built behind the levees, new design criteria are being considered, and other more wetland-friendly policies are being adopted. For a city like New Orleans, however, which is built below sea level and where relocation is impractical, levees can be used effectively to protect flood-prone areas.

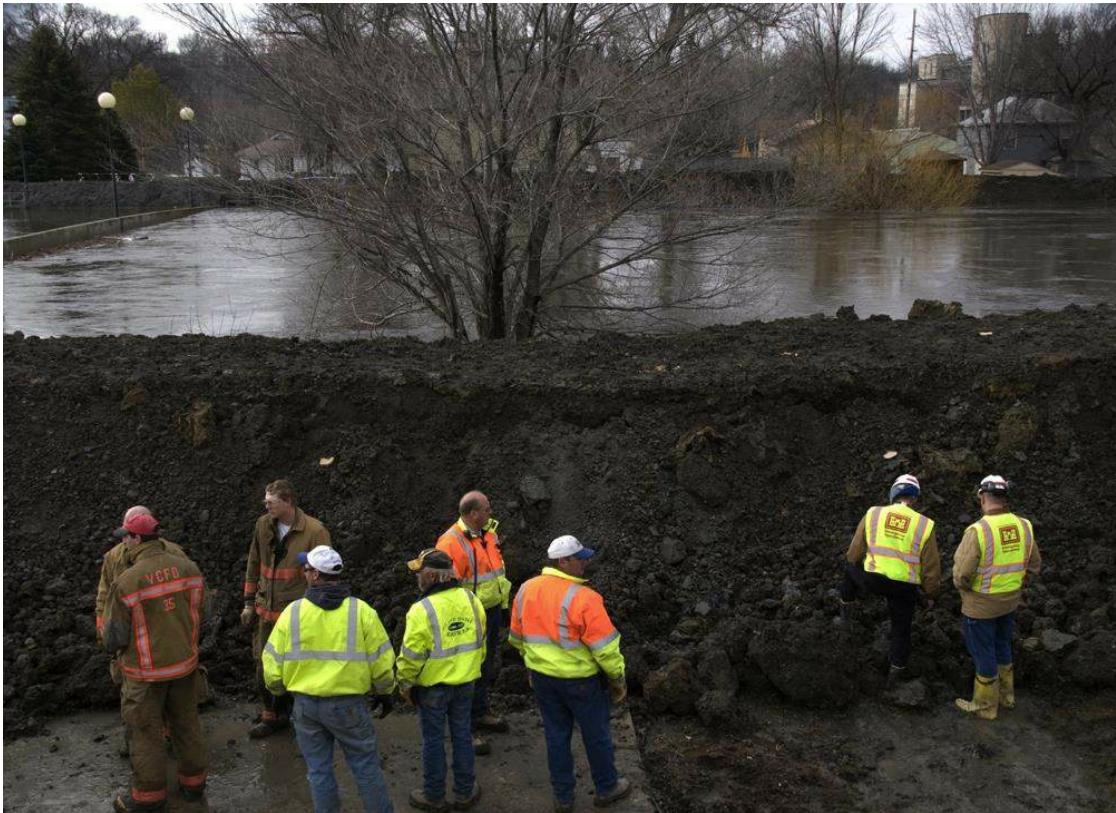


FIGURE 3.4 Valley City, North Dakota, Apr. 13, 2009. Members of the US Army Corps of Engineers inspect the site of a levee where severe seepage threatens the integrity of the levee in downtown Valley City, North Dakota. The Corps is working with city officials and the National Guard to ensure the safety of the levees in the town. Photo by Patsy Lynch/FEMA.

Other structural controls are intended to protect coastal areas. Seawalls, bulkheads, breakwaters, groins, and jetties are intended to stabilize the beach or reduce the impacts of wave action. These structures are equally controversial because they protect in one place and increase the damage in another. New Jersey's shoreline is a prime example of the failure of seawalls as a solution to shoreline erosion problems. Cape May, New Jersey, where cars used to be raced on the beach, lost all of its beachfront. An ongoing beach replenishment project is the only thing that has brought some of it back.

Hurricane Sandy, which had major impacts along the New Jersey Shore, has reignited the controversies surrounding the use of federal funds for coastline stabilization, beach replenishment, seawalls, and structural controls as a means of effective mitigation. FEMA programs will, in certain circumstances, support beach replenishment under FEMA's public assistance program when the beach is critical to the economic vitality of a community and is accessible to the public.

Congressman Frank Pallone announced in May 2013 that the US Army Corps of Engineers has agreed to undertake the "largest beach replenishment project in the history of the country". The project will stretch from Sea Bright, New Jersey to Manasquan, New Jersey and the estimated cost is \$102 million. The project will be completely paid for with federal Sandy relief money. The State of New York has said that funding coming from FEMA will be used to do dune restoration along areas of Staten Island, Brooklyn, and Queens, New York.

FEMA is also supporting a number of other structural control measures for protecting facilities impacted by Sandy. Examples of the projects being supported include:

- NYU Langone medical Center will elevate critical equipment and install submarine doors to dry flood proof sensitive areas
- Coney Island Hospital will build a floodwall and a new flood proofed building
- New Jersey, New York and NYC Wastewater Collaboration are installing flood barriers
- New Jersey Transit is installing submarine style doors on all trains and subway entrances and incorporating flood barriers at selected stations

Additional Research

FEMA P-942, Hurricane Sandy MAT Report (2013):

<http://bit.ly/2etkr77>

Critical Thinking

- What mitigation measures are best suited to address the hazards you face as an individual?
- What mitigation measures are best suited to address the hazards faced by your community?
- Do you think the Federal government should pay for beach replenishment?
- When are structural controls the most effective mitigation measures?

Impediments to Mitigation

If so many tools can be applied, why haven't risk-reduction and risk-mitigation programs been more widely applied? Some of the reasons are denial of the risk, political will, costs and a lack of funding, and taking on the issue. Despite the best technical knowledge, historic occurrence, public education, and media attention, many individuals don't want to recognize that they or their communities are vulnerable. Recognition requires action, and it could have economic consequences as businesses decide to locate elsewhere if they find the community is at risk. Some people are willing to try to beat the odds, but if a disaster strikes, they know the government will help them out. Gradually, however, such attitudes are changing. Potential liability issues are making communities more aware, media attention to disasters has brought public pressure, and the government has provided both incentives for, and penalties for not, taking action.

As previously mentioned, mitigation provides a long-term benefit. The US political system tends to focus on short-term rewards. Developers are large players in the political process and often are concerned that mitigation means additional costs. Mitigation strategies and actions require political vision and will. When Tip O'Neill was Speaker of the US House of Representatives, he said, "All politics is local." Well, so is mitigation. Local elected officials are the individuals who have to promote, market, and endorse adopting risk reduction as a goal. For many elected officials, the development pressures are too much, funding is lacking, and other priorities dominate their agendas; however, with the increasing attention to the economic, social, and political costs of *not* dealing with their risks, more elected officials are recognizing that they can't afford to not take action.

Mitigation costs money. Most mitigation of new structures or development can be passed on to the builder or buyer without much notice. Programs to retrofit existing structures or acquisition and relocation projects are expensive and almost always beyond the capacity of the local government. Funding for mitigation comes primarily from federal programs that need to be matched with state or local dollars. As state and local budgets constrict, their ability to match is reduced. Strong arguments can be made that it is in the best financial interest of the federal government to support mitigation. These arguments and a series of large disasters resulted in substantial increases in federal funding, including new monies for predisaster mitigation, but the fact remains that mitigation needs far outweigh mitigation funding.

Many mitigation actions involve privately owned property. A major legal issue surrounding this is the "taking" issue. The Fifth Amendment to the US Constitution prohibits the taking of property without just compensation. What constitutes a taking, under what circumstances, and what is just compensation has been the focus of numerous legal cases. Several have dealt with the use of property in the floodplain and the use of oceanfront property on a barrier island. The decisions have been mixed, and taking will continue to be an issue

in implementing mitigation programs and policies. In 2009, the US Supreme Court agreed to hear a case brought by homeowners in Florida dealing with property lines and ownership on properties where beach replenishment was undertaken with public funds. As of the writing of this text, no decision on the case had been issued by the Court.

Additional Research

“No Adverse Impact and the Courts: Protecting the Property Rights of All” is a report that was issued in Nov. 2007 by the Association of State Flood Plain Managers (ASFPM). It discusses the general law of the nation and selected legal issues associated with a “no adverse impact” floodplain management approach.

Source: <http://bit.ly/2f024qV>.

Federal Mitigation Programs

FEMA is responsible for most of the programs of the federal government that support mitigation and in this section we examine some of them. As noted earlier, the Small Business Administration (SBA), Economic Development Administration (EDA), and HUD have policies that support mitigation. The Partnership for Advancing Technology in Housing (PATH) program at HUD supports incorporating mitigation into public housing. The Environmental Protection Agency (EPA) has several programs in floodplain management, and in 2002 it initiated a new pilot program for national watersheds. The National Earthquake Hazards Reduction Program (NEHRP) includes several other federal agencies, but the predominant federal agency involved in disaster mitigation is FEMA. FEMA's programs include the NFIP, the Hazard Mitigation Grant Program (HMGP) (Fig. 3.5), the Pre-Disaster Mitigation Program (PDM), the Flood Mitigation Assistance Program (FMA), the Repetitive Flood Claims Program (RFC), the Severe Repetitive Loss (SRL) National Earthquake Hazard Reduction Program (NEHRP), the National Hurricane Program, and the Fire Prevention and Assistance Grant Program.



FIGURE 3.5 Albany, New York. This church is being moved half a mile to higher ground as part of the Stryker Road relocation project in Schoharie County, New York. The Hazard Mitigation Grant and Public Assistance Programs helped fund the project. Schoharie County Planning and Development Agency

photos.

In 2000, Congress passed the Disaster Mitigation Act of 2000 (DMA2000) which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act in an effort to encourage mitigation planning at the state and local levels, requiring that states maintain mitigation plans as a prerequisite for certain federal mitigation funding and disaster assistance programs. The program also provided incentives to states that could show increased coordination and integration of mitigation activities by establishing two different levels of state plan certification—standard and enhanced. States that demonstrated what was considered “an increased commitment to comprehensive mitigation planning” through the development of an approved Enhanced State Plan could increase the amount of funding they received through the HMGP. DMA2000 also established a new requirement for local mitigation plans and authorized up to 7% of HMGP funds available to a state to be used for development of state, tribal, and local mitigation plans.

The Hazard Mitigation Grant Program

The HMGP is the largest source of funding for state and local mitigation activities. This program provides grants to state and local governments to implement long-term hazard mitigation programs after the president has declared a major disaster. HMGP projects must reduce the risks, and the benefits of the project must exceed the costs. Here are some examples of activities supported by the HMGP:

- Acquisition of property on a voluntary basis and commitment to open use of the property
- Retrofitting of structures and lifelines
- Elevation of structures
- Vegetation management programs
- Building code enforcement
- Localized flood-control projects
- Public education and awareness

Congress enacted this program in 1988 as part of the Robert T. Stafford Act, which was a major reworking of federal disaster policy. Besides creating the HMGP, it established a cost sharing of disaster assistance by the states. At the time, the formula for state HMGP funding was 15% of the public assistance costs, and it had a 50% federal/50% state cost share.

From 1988 to 1993, many states did not take advantage of the HMGP funding because it was difficult to meet the matching requirements, even though the 15% cap was often not very much. After the devastation of the 1993 Midwest floods, Representative Harold Volkmer from Missouri championed a change to the legislation that would significantly increase the states' ability to mitigate. Congress amended the legislation to allow for a 75% federal/25% state match and dramatically increased the amount of funding to 15% of the total disaster costs. The rationale for these changes was to work aggressively to move people

and structures out of the floodplain. The HMGP has allowed states to hire staff to work on mitigation and requires the development of a State Hazard Mitigation Plan as a condition of funding. This program brought about a change in the emergency management community at the state and local levels. With adequate funding, states and localities began to hire staff designated to work on mitigation.

The HMGP has its detractors, and in 2002 the Office of Management and Budget (OMB) proposed that this program be eliminated in favor of a new pre-disaster competitive grant program. However, Congress did not agree, and the HMGP program remains and provides the most significant funding for mitigation at the federal level.

The Pre-Disaster Mitigation Program

Through the Disaster Mitigation Act of 2000, Congress approved the creation of a national Pre-Disaster Mitigation Program (PDM) to provide mitigation funding not dependent on a disaster declaration. The genesis of PDM was an initiative of the Clinton administration called Project Impact: Building Disaster-Resistant Communities. Project Impact grew out of the devastating disasters of the 1990s. Many of the communities hit by these disasters took months and even years to recover from emotionally and financially. James Lee Witt, then director of FEMA, questioned the wisdom of spending more than \$2.5 billion per year on disaster relief and not a penny to reduce disasters *before* they happen. The mitigation tools and techniques were available, so why not work to prevent individuals and communities from becoming victims of disasters? With a small amount of seed money, FEMA launched Project Impact in 1997 in seven pilot communities.

The concept behind the initiative was simple: The mitigation activities had to be designed and tailored to the hazards in that community, and all sectors of the community had to become involved in order for it to be effective and sustainable. Project Impact brought the business community under the emergency management umbrella. Communities were asked to achieve the following four goals:

- Build a community partnership
- Assess the risks
- Prioritize risk-reduction actions
- Build support by communicating your actions

By 2001, more than 200 communities were participating in Project Impact and Congress had appropriated \$25 million to the initiative. Seattle, Washington, was one of the original pilot communities. In 2002, when a 6.8 earthquake struck Seattle, the mayor attributed the success of their Project Impact activities for the minimal damages and prompt recovery.

Case Study: The Nisqually Earthquake and Project Impact

On Feb. 28, 2001, a magnitude 6.8 earthquake occurred 32 miles below the Nisqually wetland north of Olympia, the Washington state capital. Ironically, the quake occurred as the Seattle Project Impact Steering Committee was preparing to celebrate the initiative's third anniversary with several hundred of its partners. Had the quake occurred 1 hour later, all of the region's emergency managers would have been gathered at the Phinney Ridge Neighborhood Center in Seattle. Instead, committee members and a few early birds guided children from the center's two daycare programs to safety.

Members of the response and recovery community were not fully tested by the earthquake, largely because it was deep, and drought conditions in the Puget Sound region reduced the number of landslides and amount of liquefaction that would normally be caused by a quake of that magnitude. There was only one significant aftershock and a few secondary impacts (one fire and several major landslides). However, the quake did interrupt business operations and damage numerous building components, such as chimneys, facades, water pipes, and equipment.

Many historic, commercial, and manufacturing facilities were damaged, including key government structures such as the state legislative building and the regional airport control tower. Additional damage was uncovered while engineering teams performed inspections, although structural losses (i.e., damage to components essential to a building's structural integrity) will undoubtedly be a fraction of nonstructural losses (i.e., damage to nonessential building structural elements, such as architectural features and heating and electrical systems, and losses due to lost productivity, etc.).

What effect did FEMA's Project Impact have, if any, in reducing the damage from this earthquake? In short, the program transformed the way residents deal with disasters and established an organizational structure that takes advantage of this change.

Project Impact has the broad goal of reducing risks by changing the way communities think about and deal with disasters. More importantly, it asks communities to be farsighted, to assess hazards rather than just respond to them, to protect themselves, and to become disaster-resistant. The program is based on three simple principles:

- Preventive actions must be decided at the local level and must be responsive to local hazards
- Private sector participation is vital
- Long-term efforts and investments in prevention are essential

The Seattle/Tacoma metropolitan area, which includes King, Pierce, and Kitsap counties, has been heavily involved in Project Impact, and Seattle was a pilot participant in the program. It is useful to examine Project Impact's effectiveness by assessing how well its goals were met in the context of the Nisqually earthquake.

Change the way we think about and deal with disasters.

Perhaps the most significant (and most difficult to measure) effect the initiative had is in demystifying and personalizing earthquake risk reduction for thousands of individuals, small businesses, and corporate partners.

Preventive actions must be decided at the local level.

The Seattle and King, Pierce, and Kitsap County Project Impact programs were essentially collective actions taken by hundreds of partners. Seven programs can be linked directly to Project Impact, including efforts in home and school retrofitting, hazard mapping, transportation corridor vulnerability mitigation, office and home nonstructural retrofitting, and small business resumption planning. It is too early to assess the full impact of these programs, but here are some early conclusions.

- The most significant benefit of Project Impact might be the reduction (or minimization) of structural damage in retrofitted buildings.
- Project Impact decommissioned very heavy and hazardous water tanks located in the attics of seven Seattle schools, and one of these schools was damaged significantly by the quake. Had the water tank been in use, the building would have suffered even more damage, and the ceilings above several classrooms most likely would have failed. The school program also included extensive nonstructural retrofitting. No losses were reported in participating schools, and even more important, evacuation was not impeded. Other schools were not so fortunate.
- Over 1000 homeowners attended home retrofitting workshops, and over 300 had retrofitted their homes before the quake. None of these retrofitted residences were damaged.
- Each of the four Project Impact jurisdictions had implemented long-range transportation corridor and hazard mapping programs. Information generated through these programs is greatly aiding the inspection process and helping to jump-start discussion on mitigation alternatives. In addition, these projects brought together public road managers who created "tool kits" for contingency routing that will be useful in other kinds of disasters. The quake elevated the priority of these initiatives, and funding is expected. Private sector participation is vital.
- All four Project Impact jurisdictions and their private sector partners had developed aggressive business resumption programs. Over 100 large businesses and more than 500 small businesses were involved in Project Impact, and tens of thousands of earthquake safety products were in their offices. Business hazard reduction programs had been created by partners such as Washington Mutual, Bank of America, PEMCO, SAFECO, the Boeing Company, Bartell, the Russell Corporation, the King County Labor Council, and Home Depot, and many of the employees of these partners had implemented earthquake safety measures in their own homes as well.
- Project Impact communities and their partners ambitiously pursued risk-reduction outreach prior to the earthquake. Home Depot stores displayed home retrofitting techniques. Grocery and drug stores displayed earthquake safety products. Informational flyers accompanied utility bills, paychecks, and insurance renewal forms. A computer tie-down campaign attracted funding partners and garnered donations of computer tie-downs for area schools. The Project Impact logo was prominently displayed along with the message "Creating Disaster-Resistant Communities" during hundreds of

newscasts.

Effects that were not directly related to specific programs.

- During and immediately following the earthquake, participating news organizations provided a consistent message about the earthquake hazard and described methods for preventing damage. Since its inception, Project Impact has worked regularly with the press, and the ABC and CBS local affiliates are formal Project Impact partners.
- Shortly after the quake, homeowners were able to obtain lists of area contractors trained in seismic retrofitting. This information is particularly useful immediately after a disaster, when unscrupulous contractors can prey on disaster victims.

Long-term efforts and investments in prevention are essential.

Research is currently under way to assess the more indirect long-term impacts of the Nisqually quake. FEMA and the University of Washington have established a clearinghouse to facilitate research, but an examination of efforts that are directly attributable to Project Impact indicated that Puget Sound residents accepted the responsibility for their hazard vulnerability and focused on protecting themselves. Here are three examples:

- “Secure It” was a Pierce and King County Project Impact program, but all four project participant areas noted increased availability of computer tie-downs and other office-related items that were difficult to obtain when the programs began. After the earthquake, many vendors saw a dramatic increase in orders for these products.
- Home retrofitting activities increased substantially. Roger Faris of the Phinney Ridge Neighborhood Center Home Improvement program indicated at the time that the program could not keep up with the demand for the Project Impact home retrofitting course. Before the quake, he scheduled one course per month with 20–30 attendees. After the quake, he held four per month and had 60 participants per class. Private contractors could not keep up with the substantially increased demand for retrofitting services. Homeowners had difficulty hiring the 60 contractors who had taken the University of Washington (a Project Impact partner) earthquake retrofitting course. Due to the increased interest among contractors, additional courses were scheduled.
- The Project Impact coordinator for the Seattle school district received the following letter from a school principal:
Just wanted to let you know the good news on how well the building did during the earthquake—and a big thanks for the retrofitting. We did not even have a single light cover come down, a computer fall over, a book come off a shelf. Now, how do we get more straps to do the new things we have installed since retrofitting was done here? Thank you. You made believers out of us!

Source: <http://bit.ly/2fhGwnJ>.

At the same time, FEMA initiated two targeted pre-disaster floodplain-management programs funded through National Flood Insurance Program

premiums. The Bush Administration discontinued Project Impact but Congress initiated a smaller pre-disaster mitigation program in 2001 as described below.

Flood Mitigation Assistance Program

The National Flood Insurance Program (NFIP) is a program in which the Federal government provides low cost insurance from floods to communities who agree to pass ordinances and take actions to prohibit future development in the floodway and limit development in their identified floodplains. The NFIP is supported through the collection of premiums, not through Congressional appropriations. The NFIP administers the National Flood Insurance Fund and funds the Flood Mitigation Assistance Program (FMAP) to provide funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP.

FMAP provides planning grants to states and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for project grants. These grants are available to states and NFIP-participating communities to implement measures to reduce flood losses.

Ten percent of the project grant is made available to states for technical assistance. These funds may be used by the state to help administer the program. To be eligible for the FMAP planning and project grants, communities must be NFIP participants. Examples of the projects that are eligible under this program include the elevation, acquisition, or relocation of NFIP-insured structures.

Severe Repetitive Loss Program

The Severe Repetitive Losses (SRL) Program is designed to provide funding to projects that mitigate the damage to residential properties insured under the NFIP. The program is designed to reduce or eliminate repeated claims under the NFIP through projects that will provide the greatest savings.

Community Assistance Program

The Community Assistance Program (CAP) provides funding to meet negotiated objectives for reducing flood hazards in NFIP communities. The program intends to identify, prevent, and resolve floodplain management issues in participating communities before they require compliance action by FEMA. Available CAP funding is provided on a 75% federal maximum and 25% minimum state cost-sharing basis through annual FEMA-State Performance Partnership Agreements.

Other Disaster Mitigation Programs: Current/Future Funding Outlook

The current and future funding outlook for federal disaster mitigation programs is not positive.

Funding for the PDM program shrank from \$50 million in 2004 to \$5 million in 2009. Under pressure to reduce the FEMA budget, DHS made a budget request to Congress in 2012 that did not include any appropriation for this program. Instead, they explained that it was their intent to move PDM activities to the FMAP programs to be supported by the NFIP Insurance Fund. The problem with this approach is that the FMAP program and all the other programs funded through the NFIP have needed to be drastically reduced or suspended in recent years because flood insurance claims have exceeded premiums collected. This started with claims from Hurricane Katrina and continued following a series of major floods that occurred in subsequent years, resulting in a virtual bankruptcy of the program (which has had to borrow from the federal treasury to meet its claims obligations). The claims from Hurricane Sandy will add to the financial burden. Changes to the legislation to allow FEMA to look toward actuarial rates may offer some relief but negotiating rate changes with state insurance organizations will consume a significant amount of time and political capital.

The National Earthquake Hazard Reduction Program

The National Earthquake Hazard Reduction Program (NEHRP) is a federal government effort established by Congress in 1977 (Public Law 95–124) as a long-term, nationwide program to reduce the risks to life and property in the United States resulting from earthquakes. This is accomplished through the establishment and maintenance of an effective earthquake hazards reduction program.

The NEHRP is a multiagency effort that works to improve understanding, characterization, and prediction of hazards and vulnerabilities; improve model building codes and land-use practices; reduce risk through post-earthquake investigations and education; develop and improve design and construction techniques; improve mitigation capacity; and accelerate application of research results. The NEHRP provides funding to states to establish programs that promote public education and awareness, planning, loss estimation studies, and some minimal mitigation activities.

The specific roles of each of the agencies within NEHRP are as follows:

- FEMA is responsible for emergency response and management, estimation of loss potential, and implementation of mitigation actions.
- National Institutes of Science and Technology (NIST) conducts applied earthquake engineering research to provide the technical basis for building codes, standards, and practices, and provides the NEHRP lead agency function.
- The National Science Foundation (NSF) conducts basic research in seismology, earthquake engineering, and social, behavioral, and economic sciences, and it operates the Network for Earthquake Engineering Simulation (which includes the tsunami wave basin research facility and supporting tsunami research).
- The US Geological Survey (USGS) operates the seismic networks, develops seismic hazard maps, coordinates post-earthquake investigations, and

conducts applied earth sciences research (which includes tsunami research and risk assessment).

- NSF and USGS jointly support the Global Seismographic Network (GSN), the main facility for pinpointing earthquakes in real time.

Since its inception, NEHRP has been reviewed and reauthorized by Congress every 2 or 3 years. Congress recently completed a thorough 2-year review of NEHRP, resulting in enactment of the NEHRP Reauthorization Act of 2004 (P.L. 108–360), which President Bush signed into law on Oct. 25, 2004. Public Law 108–360 designates NIST as the lead agency for NEHRP, transferring that responsibility from FEMA, which had filled that role since the program's inception.

The NEHRP Reauthorization Act of 2004 authorized \$900 million to be spent during the period from 2004 to 2009. The law also authorized the spending of \$72.5 million over a 3-year period for the creation of a National Windstorm Impact Reduction Program modeled according to NEHRP. Funds have never been appropriated for this new program, but supporters introduced the concept again in 2009 as part of the NEHRP reauthorization.

The National Hurricane Program

This FEMA program supports activities at the federal, state, and local levels that focus on the physical effects of hurricanes, improved response capabilities, and new mitigation techniques for the built environment. The program has done significant work in storm surge modeling and evacuation planning, design and construction of properties in hurricane-prone areas, and public education and awareness programs for schools and communities. The amount of funding that FEMA receives for this program is in the range of \$3 million annually, which is clearly not commensurate with the risk.

The Fire Prevention and Assistance Act

This program was created in 2001 to address the needs of the nation's paid and volunteer fire departments and to support prevention activities. Congress had long-standing concerns about the status of this first-responder community. New threats from potential biochemical terrorism, increasing wildfire requirements, and a stagnant search-and-rescue capability provided the rationale for funding this program. This multimillion-dollar grant program provides competitive grants to fire companies throughout the United States. In the wake of 9/11, the appropriations for this program tripled in 2002 and have continued at around the \$600 million level.

Other federal agencies such as the previously mentioned HUD, the US Army Corps of Engineers (COE), the Small Business Administration (SBA), the Department of Agriculture (DOA), and the Economic Development Administration (EDA) will provide in the aftermath of a disaster varying levels of support for local mitigation projects.

Critical Thinking

- Should mitigation funding from the federal government be tied to individual disasters like it is with the Hazard Mitigation Grant Program, or should it be independent of disasters altogether like with the Pre-Disaster Mitigation Program? Explain your answer.
- What are the advantages of having a hazard-specific grant program such as the National Earthquake Hazard Reduction Program (NEHRP)? Are there any disadvantages?

New FEMA Initiatives in Mitigation

National Mitigation Framework

In May 2013, FEMA released the National Mitigation Framework and the National Prevention Framework. The National Mitigation Framework is designed to establish an approach for coordinating how the nation addresses risk and manages mitigation capabilities. The Executive Summary describes the framework as describing “how the Nation will develop, employ and coordinate core mitigation capabilities to reduce the loss of life and property by lessening the impact of disasters”.

The Framework explains that by “working together, risks can be recognized and addressed through a culture of preparedness and mitigation that is built and sustained over time. This begins with a comprehensive understanding of risk that is translated into plans and actions through partnerships. Aiming toward the ultimate goal of sustainability and resilience, mitigation requires a process of continuous learning, adapting to change, and managing risk, measuring successes, and evaluating progress.”

The Framework identifies four guiding principles for mitigation, which include Resilience and Sustainability, Leadership and Locally Focused Implementation, Engaged Partnerships and Inclusiveness, and Risk-conscious Culture. These principles lay the foundation for the Mitigation mission and the execution of its core capabilities.

“Effective mitigation begins with identifying the threats and hazards a community faces and determining the associated vulnerabilities and consequences. Sound assessment requires risk information—based on credible science, technology, and intelligence—validated by experience. Understanding risks makes it possible to develop strategies and plans to manage them. Managing risks from threats and hazards requires decision making to accept, avoid, reduce, or transfer those risks. Avoiding and reducing risks are ways to reduce the long-term vulnerability of a community and build individual and community resilience.”

In describing the Framework, FEMA explains it is driven by risk, rather than the occurrence of incidents. By fostering comprehensive risk considerations, the Framework encourages behaviors and activities that will reduce the exposure and vulnerability of communities.

The Nation increases its resilience when it manages risks across this

spectrum, from narrow-impact incidents to widespread, severe, and catastrophic disasters. Building and sustaining a mitigation-minded culture will make the nation more socially, ecologically, and economically resilient before, during, and after an incident. Resilience in communities and the action depends on the whole community working together.

Source: The National Mitigation Framework can be accessed at <http://bit.ly/2f6Jrz4>.

Hurricane Sandy Building Sciences Mitigation Assessment Teams

In the aftermath of Hurricane Sandy, FEMA reinvigorated their Mitigation Assessment Teams (MATS), which are responsible for going into the impacted areas and assessing how buildings performed during a storm and what mitigation actions could be incorporated into the rebuilding to minimize the impacts of future disasters. The Building Sciences branch has issued a series of Hurricane Sandy Recovery Advisories that provide advice on a wide variety of options to improve and address issues relative to rebuilding after Hurricane Sandy.

Hurricane Sandy Recovery Advisories:

- Improving connections in elevated coastal residential buildings
- Reducing flood effects in critical facilities
- Restoring mechanical, electric and plumbing systems in non-substantially damaged residential buildings
- Reducing interruptions to mid- and high-rise buildings from floods
- Protecting building fuel systems from flood damage
- Advisories are available at <http://bit.ly/2fAAjY0>.

Critical Thinking

- Should mitigation funding from the federal government be tied to individual disasters like it is with the Hazard Mitigation Grant Program, or should it be independent of disasters altogether like with the Pre-Disaster Mitigation Program? Explain your answer.
- What are the advantages of having a hazard-specific grant program such as the National Earthquake Hazard Reduction Program (NEHRP)? Are there any disadvantages?

Nonfederal Mitigation Grant Programs

The most significant mitigation funding in the United States comes from federally funded grant programs. However, all states have established State Hazard Mitigation Officers (SHMOs) to manage the programmatic and financial matching requirements of the federal programs. SHMOs are responsible for producing a statewide hazard mitigation plan, which is a

requirement for receiving HMGP funding post-disaster, and the quality of the plan can become a factor in altering the cost-share formula after an event. Increasingly, states are playing a more active role in historic preservation and mitigation of historic, cultural, and environmentally sensitive areas.

Regional programs such as Rebuild Northwest Florida, administered by a public-private partnership in Florida, provide grant money to homeowners who wish to structurally mitigate their homes from storm damage. Rebuild approves grants from qualified homeowners that help them improve the strength of their houses through such mitigation measures as creating secondary water barriers, improving roofing and roof decks, bracing gable ends, applying tie-down ("hurricane") straps, reinforcing wall-to-wall connections, and much more. Some nongovernmental programs, whether private, nonprofit, or public, provide the monetary, material, and technical assistance that individuals, businesses, and communities require for mitigating their hazard risks. The Institute for Business and Home Safety (IBHS), for example, creates guidance documents that illustrate various structural and nonstructural mitigation techniques. IBHS employees work with various entities, such as daycare centers, to help them reduce hazard vulnerabilities.

Two other entities are focusing on mitigation and related issues. The Association of State Flood Plain Managers (ASFPM) is a strong proponent of mitigation at all levels and has successfully lobbied Congress for increases in federal mitigation dollars. A goal of the National Hazard Mitigation Association (NHMA) is to promote mitigation nationwide and within the international community. The International Association of Emergency Managers (IAEM), which represents local emergency managers worldwide, has recently become more engaged in promoting mitigation among its membership.

Resiliency and Climate Change

The two major trends that will impact the adoption of mitigation as a national strategy to reduce the social and economic impacts of disasters are the support for building community resiliency and an emerging National and global commitment for dealing with the effects of climate change and sea level rise.

Resiliency has been defined in many different ways but the essence is that "it is a measure of the sustained ability of a community to utilize available resources to respond to, withstand, and recover from adverse situations." The word mitigation does not appear in any definitions yet the clear goal of building resiliency is to mitigate the impacts of disasters of any sort. Much of the support for this concept has come from the private sector, particularly foundations. The Rockefeller Foundation has been particularly active with their grants to communities and funding support to have a Resilience Officer or Official in each community it sponsors. Perhaps like the push for sustainability, this is just an old concept given a new name or perhaps a more acceptable name and less contentious than using the term mitigation.

Case Study: Case Studies in Building Community Resilience

Aug. 19, 2015

Explore how sub-national jurisdictions (municipalities, states, and special administrative regions) in the United States and China are taking action to build resilience to natural hazards, extreme weather, and climate change with a series of new case studies produced by the Georgetown Climate Center and Georgetown faculty.

By comparing the efforts undertaken in this diverse set of jurisdictions, the case studies highlight ways that communities across the world are being affected by climate change and some of the efforts underway to respond to impacts that are already being felt. For example, case studies from Louisiana and Shanghai focus on reducing vulnerability to coastal storms and flooding. Case studies of Austin, Texas, and Beijing include those cities' efforts to address water scarcity. Finally, profiles of Washington, DC, and Hong Kong include measures to address urban heat impacts.

While some of these locations are explicitly considering their vulnerabilities to the effects of climate change, others are implementing measures that will build their long-term resilience without explicit reference to climate change.

The case studies examine the resilience initiatives of the following jurisdictions:

- **The State of Louisiana:** This case study examines state and local activities to reduce coastal vulnerability from sea level rise, extreme storms, and land subsidence. It focuses on how the state is prioritizing and designing coastal flood protection and restoration projects in consideration of future sea level rise through the Louisiana Coastal Master Plan, and discusses local efforts to consider climate change in land-use plans including the Lafourche Parish Comprehensive Resiliency Plan and the City of New Orleans Master Plan.
- **Shanghai, China:** This case study examines how Shanghai is addressing flooding and storm impacts by building a levee system along the Huangpu River, expanding seawalls along the coast, and upgrading the city's urban drainage system to include green infrastructure.
- **Austin, Texas:** This case study discusses how Austin city agencies are developing a city adaptation plan, assessing climate change risks across sectors, establishing of a Water Resource Planning Task Force, and developing recommendations to address long-term reductions in the city's water supply in response to resolutions from their city council.
- **Beijing, China:** This case study examines how Beijing is responding to reduced water supply by converting farmland to forest to reduce water needs, expanding water recycling programs, and promoting more efficient irrigation technology. The case study also examines how it is hoped that a large national water diversion project will reduce the city's vulnerability to long-term water shortages.
- **Washington, District of Columbia:** This case study discusses the District's efforts to reduce urban heat islands by making grants to pilot the use of cool

roofs, implementing the Smart Roof Initiative to retrofit District-owned buildings, and adopting of a new Green Building Code.

- **Hong Kong, China:** This case study examines how Hong Kong is responding to urban heat islands and increased flooding by expanding the urban tree canopy, deploying an extreme heat warning system, building sea walls with sea-level rise in mind, and using vegetation to prevent landslides.

These case studies report on specific activities that are being undertaken in each jurisdiction. They do not evaluate the effectiveness or appropriateness of these actions. The Georgetown Climate Center collaborated with **Professor Joanna Lewis** at Georgetown University's Edmund A. Walsh School of Foreign Service on this interdisciplinary comparative research, supported by the MacArthur Foundation and the Georgetown Environment Initiative.

Climate change, in spite of the political controversy the words seem to cause, is something communities are living with everyday and increasingly feeling the negative impacts of. FEMA took a bold move in 2015 when it announced that as a condition of funding any requested preparedness or mitigation money, communities and states would have to include an assessment of any specific threats to their communities related to climate change. They requested that an analysis be conducted and an identification of potential policies and projects that would address the risks they faced from climate change. The International Association of Emergency Managers, an organization that represents local emergency managers, has issued a policy paper on the subject which includes the following recommendation: "that all emergency managers incorporate the short- and long-term effects of climate change in hazard vulnerability analyses, mitigation plans, and comprehensive planning".

Realistically, emergency managers have been dealing with the effects of climate change for years when working on plans for beach nourishment, protecting facilities from coastal flooding, dealing with wildfires and a myriad of other disasters. Now that funding is tied, to a degree, to recognizing this hazard, communities have new opportunities to understand what they are facing and to address their vulnerabilities.

Additional Resources

<http://bit.ly/2fhM3xb>.

Conclusion

Disasters occur in every state. The direct costs of these events are staggering, but the indirect effect to the economy and the social fabric of communities is even worse. Hurricane Sandy will be the second most costly disaster after Hurricane Katrina and yet rebuilding moves forward with mitigation being an afterthought because there is no clear leadership being exercised to support and promote mitigation. A study done for FEMA by the Multi-Hazard Mitigation Council (MMC) of the National Institute for Building Sciences (NIBS) found that for every \$1 invested in mitigation, \$4 would be saved in future losses. Depending on the type of disaster and locale, this number was as high as \$8. Mitigation works. The case studies included in this chapter are just a few examples of successful, sustained programs that are reducing risk and making communities safer. The emerging trends in fostering community resiliency and dealing with climate change will certainly help focus efforts toward implementing mitigation measures at all levels of government but particularly communities. Other positive signs are FEMA's proposed rule to pay for code upgrades for the repair of facilities impacted by a disaster and in receipt of a Presidential declaration. This could have a very significant impact on improving our built environment and just makes good common sense.

Mitigation programs exist at all levels of government, but the importance of leadership at the federal level, where much of the funding for rebuilding is financed, is critical, and if not exercised will prove costly, as future storms are inevitable. There is a growing interest in the private sector in taking mitigation actions to reduce their risk exposure. It is also encouraging to see how the non-profit and foundation community has promoted—and funded—the concept of community resiliency. However, without incentives and encouragement from the federal sector, mitigation will not be applied in a uniform strategy that considers the impacts throughout the community, especially when we are looking at coastal mitigation and the potential negative impacts that structural controls have on communities downstream from the structures. Finally, the acceptance of climate change as a real hazard and a vulnerability that we recognize and acknowledge in our hazard and mitigation planning as is now required, is a true step forward toward making our communities more disaster resistant and reducing the future social and economic impacts of any kind of disaster.

Important Terms

Building codes
Hazard identification
Land-use planning
Mitigation
National Mitigation Framework
Structural controls
Community resilience

Self-Check Questions

1. How does the function of mitigation differ from other emergency management disciplines?
2. Which other emergency management function offers the best opportunities for mitigation?
3. How have geographic information systems (GIS) aided the practice of mitigation?
4. Why have building codes that require rehabilitation of existing potentially hazardous structures rarely been implemented?
5. At what government level are mitigation programs most effective, and why?
6. What are the most effective as well as the most expensive land-use planning tools? Why are they so effective?
7. What political arguments can be used to support taking mitigation actions?
8. How has the Community Development Block Grant served to help communities perform local mitigation?
9. Why do some people consider insurance to not be a proper mitigation method?
10. Why are structural controls a controversial mitigation tool? How can structural mitigations negatively affect the areas they are presumably protecting?
11. What are some impediments faced by communities wishing to perform hazard mitigation?
12. Name the primary federal mitigation programs, and explain how they serve to reduce hazard risk.
13. Do nonfederal mitigation programs exist?

Out-of-Class Exercises

Get a copy of your community's hazard mitigation plan from your local office of emergency management. Create a mitigation plan for yourself that addresses the hazards identified in the community plan as they affect you on a personal level. Determine if there are any hazards that you face as an individual that are not covered by the plan, and describe what mitigation measures you can take or have taken to address those hazards.

- Contact your state's office of emergency management, and find out what mitigation programs are currently offered. Are they all federally funded or are there any programs funded by the state or another entity? Find out if your local government participates in any of these programs or if they offer any additional programs funded by other sources. Do you believe that your community is taking advantage of every mitigation program that it can, or do you feel more could be done with what is currently offered?
- The Institute for Business and Home Safety (IBHS) has developed a mitigation guide for daycare centers (<http://bit.ly/2fmQN11>). Using this guide, assist a daycare center in your community to perform the mitigation techniques suggested in the guide.

The Disciplines of Emergency Management

Preparedness

Abstract

This chapter discusses the preparedness cycle from a systems approach, preparedness programs, hazard preparedness, training programs, and exercise programs. The focus is on federal efforts—predominantly FEMA—and best practices are highlighted through several case studies.

Keywords

Business continuity planning (BCP); continuity of operations plan (COOP); drill; full-scale exercise; functional exercise; preparedness and tabletop exercise; National Planning Frameworks; National Preparedness Goal; Whole Community

WHAT YOU WILL LEARN

- Why preparedness is considered the building block of emergency management
- The difference between mitigation and preparedness
- FEMA's Whole Community concept and the National Disaster Prevention Framework
- National Preparedness System and National Planning Frameworks
- FEMA's Preparedness Planning and 2016 National Preparedness Report
- Why evacuation planning is important
- Why special consideration must be made for functional needs populations when planning for emergencies and disasters
- How the Emergency Management Institute promotes community-level disaster preparedness
- The types of exercises and what each involves
- How training and equipment help first responders to prepare
- How businesses and nongovernmental organizations prepare for emergencies

Introduction

Preparedness in the field of emergency management can best be defined as a state of readiness to respond to a disaster, crisis, or any other type of emergency situation. Preparedness is not only a state of readiness, but it is also a theme throughout most aspects of emergency management. If you look back in US history, you will see that our forbearers practiced the preparedness that emergency managers use today. The fallout shelters of the 1950s and the air raid wardens were promoting preparedness for a potential nuclear attack from the Soviet Union. An early 1970s study prepared by the National Governors Association talked about the importance of preparedness as the first step in emergency management. Since then, preparedness has advanced significantly and continues to do so even today. The federal government dedicates billions of dollars each year to emergency preparedness, and no emergency management organization can function without a strong preparedness capability. The capacity to respond to and recover from emergency and disaster events is only developed through planning, training, and exercising—the heart of preparedness. It is the expansion of preparedness activities, including a movement into the areas of higher education, that has led to an increased professionalism within the discipline. And as the role of all sectors of society in the management of emergencies and disasters has come to light, preparedness activities have gradually expanded to include the private sector, NGOs, individuals, and others.

Today we recognize that all organizations, whether they are private, nongovernmental, or governmental, are susceptible to the consequences of disasters, and must therefore ensure their preparedness. We also know that preparedness must focus not only on the protection of citizens, property, and essential government services in the aftermath of a disaster event but also on ensuring that the viability of the community—including its businesses and markets, social services, and character—can be sustained despite the hazard risks that exist. Emergency management agencies alone cannot ensure this, which is why the practice continues to expand.

This chapter discusses the preparedness cycle from a systems approach, preparedness programs, hazard preparedness, training programs, and exercise programs. The focus is on federal efforts—predominantly FEMA—and best practices are highlighted through several case studies.

A Systems Approach: The Preparedness Cycle

As an academic field as well as an applied practice in the public and private sector, emergency management is still in the early stages of its establishment. As such, it has thus far drawn heavily on existing external fields including emergency medicine, fire suppression, public health, business risk management, and law enforcement for many of its foundational elements and core competencies. However, these disciplines are steeped in their own traditions, methods, and cultures, and they were not developed with the same goals as those in the emergency management field. Without its own foundation joining academia and structured analytic methodologies with the practices and competencies required of emergency management professionals in all sectors, advancement outside of the government sector will fall behind. The management of major emergency events and disasters requires navigation through extreme complexity and often requires coordination among hundreds to thousands of individuals and dozens of agencies and organizations. It is out of this need that a systematic approach for the preparedness function of emergency management must take such a prominent position today, not only for emergency managers and the traditional emergency services but for all emergency management stakeholders (including individual private citizens).

[Fig. 4.1](#), which was developed by the FEMA National Preparedness Directorate, shows the planning process, beginning with planning for the range of hazards that exist and working in a systematic approach toward a cyclical process to establish and improve preparedness. This cycle recognizes the importance of the four major components of any preparedness effort: planning, equipment, training, and exercise. This cycle also represents preparedness not only for government jurisdictions at all levels but also the preparedness actions taken by individuals, businesses, nongovernmental organizations, and other entities.

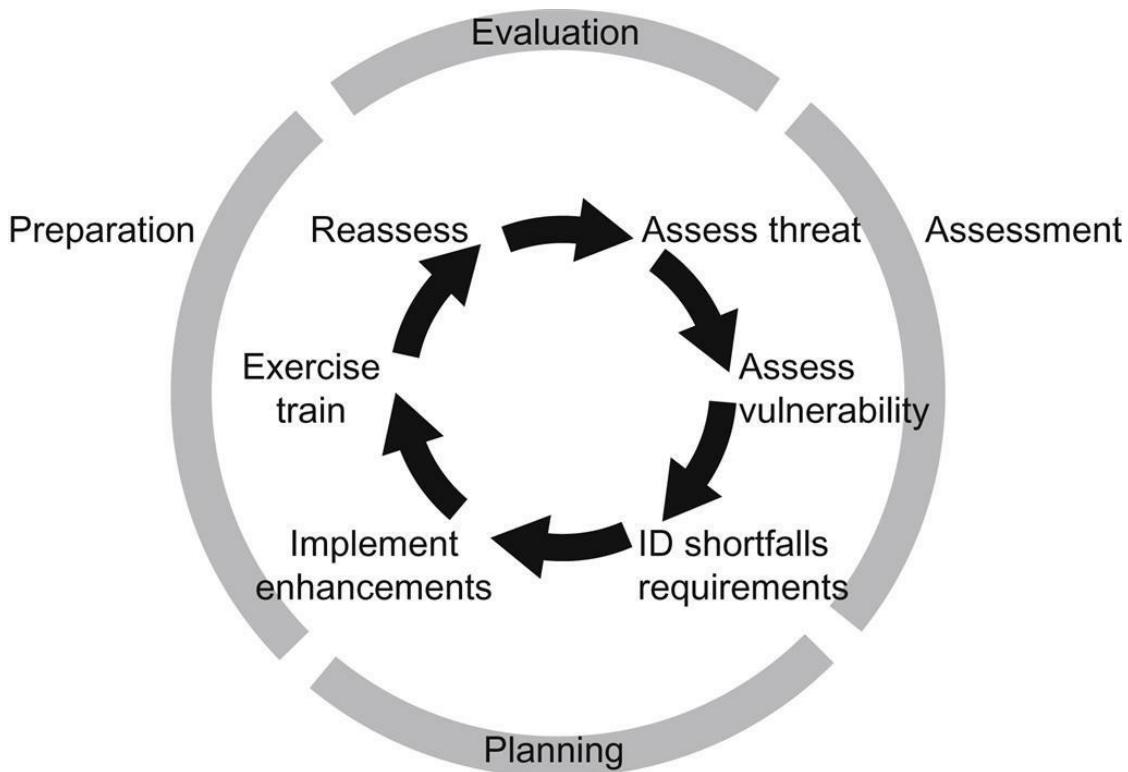


FIGURE 4.1 The preparedness planning cycle.

Step 1: Planning

In Fig. 4.1, the preparedness cycle begins with the creation of various plans through which disaster response and recovery become possible. Planning is an ambitious effort in and of itself, and it requires significant effort to achieve the many tasks involved. Planning most often begins with the hazards risk assessment process described in Chapter 2, Natural and Technological Hazards and Risk Assessment, wherein all applicable hazards are identified and assessed for prioritization. While it is true that modern emergency management philosophy proclaims plans are most effective when they address all hazards risks, it is important to be aware that all-hazards preparedness is most effective when it takes into account, and therefore places a general focus on, those hazards that are actually likely to occur. Each community makes the best of the limited funds they have, so their full spectrum of equipment, resources, and trained staff need to focus on what actually might happen. This is why, for instance, communities in North Dakota might dedicate significant funds for the capabilities and resources to manage snow removal equipment, while communities in Florida spend the same effort and funding on conducting evacuation plans, even though both involve an “all-hazards” focus.

Planning also involves a scoping of community vulnerability. In the planning phase, vulnerability helps planners understand why disasters occur, where they are most likely to have the greatest impact, and, thus, what the appropriate response should be. Vulnerability assessment for a jurisdiction, business, organization, or individual also includes an assessment of current preparedness

levels to determine the capabilities and resources that may be counted on and therefore planned for. This always includes the outside resources that may be called upon in times of need, such as mutual aid partners (e.g., town-to-town, business-to-business), emergency management assistance compacts (e.g., state-to-state assistance), inter-jurisdictional assistance (e.g., federal assistance, state-to-local assistance), contracts with private businesses and resource suppliers (e.g., debris removal companies, hazmat remediation businesses), and others. Statutory authorities—the foundation of emergency management actions—must be understood, since government practice and authority is always dictated by law, even (or especially) in times of emergency.

Emergency planning is what often fills the majority of time spent by emergency management officials and those individuals tasked with the management of emergencies at businesses or in organizations. Luckily, as stated in [Chapter 2](#), Natural and Technological Hazards and Risk Assessment, most events that occur on a daily basis fall within what is considered “normal” and are therefore managed with little or no problem. The product of planning is, of course, the plan, which is often called the emergency operations plan or the emergency plan.

Step 2: Organization and Equipment

Preparedness is limited by several factors, two of which include actual possession or access to the equipment needed to manage response requirements and the organization of people and agencies through which the necessary response and recovery tasks will take place. Emergency management is technical in practice, and its various functions rely more and more on the use of equipment. There are several categories of equipment in the emergency management profession, including, e.g., personnel protective equipment (PPE), which protects responders from the effects of the hazards; communications equipment, which allows responders to talk to one another both within and between different organizations; and special search and rescue equipment, which allows responders to enter compromised buildings, navigate hazardous waters, or detect signs of life.

Equipment is primarily dictated by the hazards that exist and the functions laid out in the emergency operations plan. The purchase and maintenance of emergency management equipment have always been a challenge for communities because of limited funds available. Clearly, though to a limited degree, the more equipment a jurisdiction can acquire in order to manage the consequences likely to befall that jurisdiction, the more prepared they will be to meet the needs of people and property when the time comes. However, as that ideal will likely never be reached, and so many competing demands exist in the community for those same funds, difficult decisions must be made. In recent years, however, a few solutions have emerged that help communities to better meet their equipment needs. These include a great expansion of federal funding for which equipment is eligible, expansion in mutual-assistance practices wherein equipment that is rarely used is shared among several communities,

and the development of cheaper and more effective technologies, wherein equipment that was once considered “out of reach” is now more realistically accessible.

Step 3: Training

Training of emergency response officials is paramount to their ability to conduct the tasks required of them. Contemporary practice recognizes that it is not only the officials involved with the traditional emergency services who must participate in emergency management training but also the elected officials responsible for key disaster-specific decisions, the businesses and nongovernmental organizations operating in the community that will be called upon to provide products or services, and the individuals whose responsibility it is to decrease their own vulnerability and assist in the overall community response. This is a lofty goal but one that has expanded at a rate that rivals most other disciplines. Training is conducted both at technical institutes, such as fire and police academies at the national, state, and local levels, and at the various universities, colleges, and community colleges around the country and the world. Training is also conducted by nongovernmental organizations, like the American Red Cross, by private companies that specialize in training for profit, and in the communities themselves, as is the case with the ever-popular Community Emergency Response Team (CERT) courses that are offered in all US states and territories. And finally, the goal of enabling a trained public is one that continues to grow in importance in the writings and words of practitioners and scholars alike.

Step 4: Exercise

The adage that “practice makes perfect” is certainly true with emergency management. Training is even more so a critical component of preparedness efforts because the rare nature of emergency events means that few officials have experienced them firsthand and thus have little applicable experience to rely on when these events do occur. Through a regimen of training, including drills, tabletop exercises, functional exercises, and full-scale exercises, a much better understanding of the realities of response is achieved, as well as the identification of shortfalls or failures in planning, training, organization, or equipment.

Step 5: Evaluation and Improvement

The final step in the preparedness cycle takes the lessons learned and applies them to future iterations. Evaluation and improvement are generally the product of two sources. The first is that of exercise. By examining how the plans, equipment, and trained staff respond to imagined scenarios it is possible to identify where changes in planning, purchases of more or better equipment, and more comprehensive training should be applied. Evaluation and

improvement is also the result of actual disaster experience. Disasters show us in bold fashion the full limits of an emergency management organization's capabilities and identify the highest benefit to cost ratio for future spending and dedication of time and staff resources. Through the use of after action reporting (AAR), disaster experiences become lessons learned and the foundation of future planning cycles.

Many of the topics described here are expanded upon in the remainder of this chapter. The cycle of preparedness is one that, as its cyclical nature dictates, is ongoing. Moreover, all steps are occurring at all times, in a constant state of evolution and improvement as information, budgets, staff, political will, and perceptions change.

Mitigation Versus Preparedness

Despite their unique definitions and both being distinct emergency management functions, significant confusion often arises over what constitutes *mitigation* and *preparedness* (and to what extent these two functions overlap). At the federal level, mitigation and preparedness are highly defined, with FEMA maintaining two completely distinct directorates (mitigation and national preparedness) to manage these functions. However, at the state, local, organizational, and private levels, there is much less of a defined boundary between the two. The major distinction between these two functions at every level is best characterized by the mission of the actions themselves, which calls into play the definitions that have been provided for mitigation and preparedness. In most simple terms, *mitigation* attempts to eliminate hazard risk by reducing either the likelihood or the consequences of the risk associated with the particular hazard. Associated activities, devices, or actions try to prevent a hazard from ever manifesting into a disaster in the first place, or they try to make the disaster much less damaging to humans, property, or the environment if an emergency or disaster situation arises. Typically, these actions are taken prior to the instance of an emergency event. *Preparedness*, on the other hand, seeks to improve the abilities of agencies and individuals to respond to the consequences of a disaster event *once the disaster event has occurred*. Preparedness assumes the occurrence of an event, whereas mitigation attempts to prevent the event altogether.

Preparedness: The Emergency Operations Plan

The emergency operations plan (EOP) is the playbook by which emergency management response operations are conducted. However, the development of an EOP is not just a documentation of what will be done and by whom, but rather it is the process by which these factors are determined. The planning process, like the preparedness process, is a cyclical one dependent on each of the subsequent steps on the preparedness cycle, and each determines how the other changes periodically. Planning must be dynamic to be effective to meet the changing character and needs of the jurisdiction or organization for which it is conducted.

Emergency plans literally come in all shapes and sizes and in all manner of quality. These plans, however, are designed by a standard paradigm. Through an evolutionary process of lesson sharing, doctrine, and guidance, select components now appear in almost all emergency plans. These components have formed because they are the most logical presentation through which the response and recovery needs of jurisdictions and agencies may be represented and therefore relied upon in times of need. These components include the following:

- *The Base Plan:* Contains the most comprehensive information about the community, its risks, its statutory authorities, and the general concept by which emergency operations are conducted (including the officials responsible and the tasks for which they will be held accountable). This section also includes the assumptions according to which the plans were created and the process by which the plans are updated and distributed.
- *Functional Annexes:* Describe in more detail the different types of assistance that the responsible agencies and officials will provide, assigning responsibility for more task-oriented information. The functional annexes tend to be more operational in nature than what is found in the base plan.
- *Hazard or Situational Annexes:* Hazard annexes recognize that despite the all-hazards nature of base plans, some of the factors are unique to specific hazards that must be described in detail and communicated to emergency management and related officials when the need arises. Using hazard annexes keeps situation-specific information out of the base plan, which can make the base plan more concise and more effective in the time-constrained period of disaster response.

The planning process and the emergency operations plan both depend heavily on all of the steps in the preparedness cycle. Planning both dictates and accounts for the equipment that must be purchased to treat the disaster consequences that are planned for and to carry out the tasks assigned. Planning also becomes the basis of training and exercise, and responders train to the capabilities laid out in the plan and rely upon the assumptions captured by the plan to determine those core competencies that are sought. The exercises that

are conducted test the jurisdiction's or organization's ability to carry out what is prescribed in the plan.

Nationwide planning efforts are currently guided by the FEMA-produced *Comprehensive Planning Guide-101 (CPG-101) 2.0*. This federal document was created to provide general yet standardized guidelines on developing EOPs and the terminology used in planning efforts and emergency management in general. The purpose of this guide was to promote a common understanding of the fundamentals of planning and decision making, which in turn would foster a more coordinated response when multiple agencies responded in concert to large-scale, multijurisdictional events. Given the pressures on communities to adopt the National Incident Management System (NIMS) and the contingencies placed on federal grant programs, it is understandable that communities would require such guidance. CPG-101 is not the first instance of the federal government providing guidelines. In fact, as long as 50 years ago, the *Federal Civil Defense Guide* was released for the same purpose. The *Civil Preparedness Guide 1-8, Guide for the Development of State and Local Emergency Operations Plans*, and *State and Local Guide (SLG) 101, Guide for All-Hazards Emergency Operations Planning* followed, and they were influential predecessors to CPG-101. CPG-101 Version 2.0 can be accessed at <http://bit.ly/2ejKUQX>.

FEMA has developed a suite of planning guides and templates—see FEMA Planning Tools and Guides sidebar.

FEMA Preparedness Planning Tools and Guides

Plan Analysis Tool

The Plan Analysis Tool (<http://bit.ly/2f02gXd>) supplements CPG 101 by providing a one-page matrix to track the development timeline for a new plan or the revision of an existing plan. The tool also captures the planning elements contained in CPG 101 to support the analysis by a jurisdiction of its existing plans.

Comprehensive Preparedness Guide 201, Second Edition

FEMA's Comprehensive Preparedness Guide (CPG) 201, Second Edition provides communities additional guidance for conducting a Threat and Hazard Identification and Risk Assessment (THIRA) (<http://bit.ly/2fmRNC7>). The first edition of this guide, released in Apr. 2012, presented the basic steps of the THIRA process. Specifically, the first edition described a standard process for identifying community-specific threats and hazards and setting capability targets for each core capability (<http://bit.ly/2fhIt3y>) identified in the National Preparedness Goal (<http://bit.ly/2fmV8RD>) as required in Presidential Policy Directive (PPD) 8: National Preparedness, CPG 201 (<http://bit.ly/2f08nuv>).

Comprehensive Preparedness Guide 502

FEMA's Comprehensive Preparedness Guide (CPG) 502 (<http://bit.ly/2fhNsDO>) focuses on the critical partnership and the exchange of information between fusion centers and Emergency Operations Centers (EOCs). The guide does not provide a "one-size fits all" approach to fusion center and EOC coordination. Rather, it outlines the information sharing roles of fusion centers and EOCs while identifying the planning and coordination considerations each entity must take into account.

Developing High Quality Emergency Operation Plans for Houses of Worship

The Guide for Developing High Quality Emergency Operations Plans for Houses of Worship (<http://bit.ly/2f04y8C>) provides recommendations in the development of plans not only to respond to an emergency but, also, outlines how organizations can plan for preventing, protecting against, mitigating the impact of and recovering from these emergencies. The guide introduces houses of worship to a new approach to planning that includes walking through different emergency scenarios to create a course of action for each objective the team is trying to accomplish. The guide emphasizes that successful planning requires all stakeholders be engaged in the planning process from the start—including community partners such as local law enforcement, fire officials, emergency medical services, and emergency management staff.

Developing High-Quality School Emergency Operations Plan

The Guide for Developing High-Quality School Emergency Operations Plan (<http://bit.ly/2e760XT>) provides recommendations in the development of plans not only to respond to an emergency but, also, outlines how schools (K-12) can plan for preventing, protecting against, mitigating the impact of, and recovering from these emergencies.

Guide for Developing High-Quality Emergency Operations Plans for Institutions of Higher Education

The Guide for Developing High-Quality Emergency Operations Plans for Institutions of Higher Education (<http://bit.ly/2f06bTZ>) provides recommendations in the development of plans not only to respond to an emergency but, also, outlines how institutions of higher education can plan for preventing, protecting against, mitigating the impact of and recovering from these emergencies.

Source: FEMA, <http://bit.ly/2fhLflq>.

Many states guide EOP planning efforts through the release of standard planning guidelines. Some states even provide templates for EOP development, which allow for standardization of not only content but of structure as well. From a state-level coordination perspective this makes perfect sense because a unified command response will call upon some form of synchronization from the various agencies involved. Such templates ensure that responders are referring to the same functions and using the same terminology, among other

needs. Virginia is one state that has such guidelines, which can be accessed at <http://bit.ly/2fAIOlF>.

FEMA's Whole Community Concept

In Dec. 2011, FEMA introduced its Whole Community concept that defined a new community-based approach to disaster preparedness. The goal is to engage all members of the community including individuals, government at all levels, organizations, businesses, community groups and others in preparing the community as a whole for the next disaster. FEMA released a document entitled, *A Whole Community Approach to Emergency Management: Principles, Themes and Pathways for Action*, that defined the concept, identified potential benefits, and outlined action steps.

FEMA's website states, "We fully recognize that a government-centric approach to emergency management is not enough to meet the challenges posed by a catastrophic incident. Whole Community is an approach to emergency management that reinforces the fact that FEMA is only one part of our nation's emergency management team; that we must leverage all of the resources of our collective team in preparing for, protecting against, responding to, recovering from and mitigating against all hazards; and that collectively we must meet the needs of the entire community in each of these areas. This larger collective emergency management team includes, not only FEMA and its partners at the federal level, but also local, tribal, state and territorial partners; non-governmental organizations like faith-based and non-profit groups and private sector industry; to individuals, families and communities, who continue to be the nation's most important assets as first responders during a disaster. Both the composition of the community and the individual needs of community members, regardless of age, economics, or accessibility requirements, must be accounted for when planning and implementing disaster strategies."

"When the community is engaged in an authentic dialogue, it becomes empowered to identify its needs and the existing resources that may be used to address them. Collectively, we can determine the best ways to organize and strengthen community assets, capacities, and interests. This allows us, as a nation, to expand our reach and deliver services more efficiently and cost effectively to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards." (FEMA, 2016)

FEMA's Whole Community Concept

Introduction

This document presents a foundation for increasing individual preparedness and engaging with members of the community as vital partners in enhancing the resiliency and security of our nation through a Whole Community approach. It is intended to promote greater understanding of the approach and to provide a strategic framework to guide all members of the emergency management community as they determine how to integrate Whole Community concepts into their daily practices. This document is not intended

to be all-encompassing or focused on any specific phase of emergency management or level of government, nor does it offer specific, prescriptive actions that require communities or emergency managers to adopt certain protocols. Rather, it provides an overview of core principles, key themes, and pathways for action that have been synthesized from a year-long national dialogue around practices already used in the field. While this is not a guide or a “how-to” document, it provides a starting point for those learning about the approach or looking for ways to expand existing practices and to begin more operational-based discussions on further implementation of Whole Community principles.

Whole Community Defined

As a concept, Whole Community is a means by which residents, emergency management practitioners, organizational and community leaders, and government officials can collectively understand and assess the needs of their respective communities and determine the best ways to organize and strengthen their assets, capacities, and interests. By doing so, a more effective path to societal security and resilience is built. In a sense, Whole Community is a philosophical approach on how to think about conducting emergency management.

There are many different kinds of communities, including communities of place, interest, belief, and circumstance, which can exist both geographically and virtually (e.g., online forums). A Whole Community approach attempts to engage the full capacity of the private and nonprofit sectors, including businesses, faith-based and disability organizations, and the general public, in conjunction with the participation of local, tribal, state, territorial, and federal governmental partners. This engagement means different things to different groups. In an all-hazards environment, individuals and institutions will make different decisions on how to prepare for and respond to threats and hazards; therefore, a community’s level of preparedness will vary. The challenge for those engaged in emergency management is to understand how to work with the diversity of groups and organizations and the policies and practices that emerge from them in an effort to improve the ability of local residents to prevent, protect against, mitigate, respond to, and recover from any type of threat or hazard effectively.

Whole Community Is a Philosophical Approach in How to Conduct the Business of Emergency Management

Benefits Include:

- Shared understanding of community needs and capabilities
- Greater empowerment and integration of resources from across the community
- Stronger social infrastructure
- Establishment of relationships that facilitate more effective prevention, protection, mitigation, response, and recovery activities
- Increased individual and collective preparedness

- Greater resiliency at both the community and national levels

Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action

The benefits of Whole Community include a more informed, shared understanding of community risks, needs, and capabilities; an increase in resources through the empowerment of community members; and, in the end, more resilient communities. A more sophisticated understanding of a community's needs and capabilities also leads to a more efficient use of existing resources regardless of the size of the incident or community constraints. In times of resource and economic constraints, the pooling of efforts and resources across the whole community is a way to compensate for budgetary pressures, not only for government agencies but also for many private and nonprofit sector organizations. The task of cultivating and sustaining relationships to incorporate the whole community can be challenging; however, the investment yields many dividends. The process is as useful as the product. In building relationships and learning more about the complexity of a community, interdependencies that may be sources of hidden vulnerabilities are revealed. Steps taken to incorporate Whole Community concepts before an incident occurs will lighten the load during response and recovery efforts through the identification of partners with existing processes and resources who are available to be part of the emergency management team. The Whole Community approach produces more effective outcomes for all types and sizes of threats and hazards, thereby improving security and resiliency nationwide.

Whole Community Principles and Strategic Themes

Numerous factors contribute to the resilience of communities and effective emergency management outcomes. However, three principles that represent the foundation for establishing a Whole Community approach to emergency management emerged during the national dialogue.

Whole Community Principles:

- **Understand and meet the actual needs of the whole community.**

Community engagement can lead to a deeper understanding of the unique and diverse needs of a population, including its demographics, values, norms, community structures, networks, and relationships. The more we know about our communities, the better we can understand their real-life safety and sustaining needs and their motivations to participate in emergency management-related activities prior to an event.

- **Engage and empower all parts of the community.** Engaging the whole community and empowering local action will better position stakeholders to plan for and meet the actual needs of a community and strengthen the local capacity to deal with the consequences of all threats and hazards. This requires all members of the community to be part of the emergency management team, which should include diverse community members, social and community service groups and institutions, faith-based and

disability groups, academia, professional associations, and the private and nonprofit sectors, while including government agencies who may not traditionally have been directly involved in emergency management. When the community is engaged in an authentic dialogue, it becomes empowered to identify its needs and the existing resources that may be used to address them.

- **Strengthen what works well in communities on a daily basis.** A Whole Community approach to building community resilience requires finding ways to support and strengthen the institutions, assets, and networks that already work well in communities and are working to address issues that are important to community members on a daily basis. Existing structures and relationships that are present in the daily lives of individuals, families, businesses, and organizations before an incident occurs can be leveraged and empowered to act effectively during and after a disaster strikes.

In addition to the three Whole Community principles, six strategic themes were identified through research, discussions, and examples provided by emergency management practitioners. These themes speak to the ways the Whole Community approach can be effectively employed in emergency management and, as such, represent pathways for action to implement the principles.

Whole Community Strategic Themes:

- Understand community complexity
- Recognize community capabilities and needs
- Foster relationships with community leaders
- Build and maintain partnerships
- Empower local action
- Leverage and strengthen social infrastructure, networks, and assets

Source: FEMA, 2011. A Whole Community Approach to Emergency Management: Principles, Themes and Pathways for Action. December, 2011. <http://bit.ly/29Cj6IV>.

The National Preparedness System

According to the Department of Homeland Security (DHS), "The National Preparedness System outlines an organized process for the whole community to move forward with their preparedness activities and achieve the National Preparedness Goal. The National Preparedness System integrates efforts across the five preparedness mission areas—Prevention, Protection, Mitigation, Response, and Recovery—in order to achieve the goal of a secure and resilient Nation. The National Planning Frameworks, which are part of the National Preparedness System, set the strategy and doctrine for building, sustaining, and delivering the core capabilities identified in the National Preparedness Goal. Integrated to ensure interoperability across all mission areas, the frameworks describe the coordinating structures and alignment of key roles and responsibilities for the whole community. The frameworks address the roles of individuals; nonprofit entities and nongovernmental organizations (NGOs); the private sector; communities; critical infrastructure; governments; and the Nation as a whole." (DHS, 2016)

DHS explains in a document entitled, "Overview of the National Planning Frameworks" published in Jun. 2016, that "The National Preparedness System describes the process employed to build, sustain, and deliver core capabilities in order to achieve the goal of a secure and resilient Nation. The National Preparedness Goal defines the core capabilities required to achieve the goal of "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." (DHS, 2016)

The National Preparedness System as developed by DHS includes five frameworks including:

- The National Prevention Framework
- The National Protection Framework
- The National Mitigation Framework
- The National Response Framework
- The National Disaster Recovery Framework

Disaster preparedness planning and activities are guided by The National Prevention Framework and The National Protection Framework. According to DHS, "The National Prevention Framework describes what the whole community—from community members to senior leaders in government—should do upon the discovery of intelligence or information regarding an imminent threat to the homeland in order to thwart an initial or follow-on terrorist attack." (DHS, 2016) The Prevention Framework includes seven prevention core capabilities:

1. Planning
2. Public Information and Warning
3. Operational Coordination
4. Forensics and Attribution
5. Intelligence and Information Sharing

6. Interdiction and Disruption
7. Screening, Search, and Detection (DHS, 2016)

According to DHS, “The National Protection Framework describes what the whole community—from community members to senior leaders in government—should do to safeguard against acts of terrorism, natural disasters and other threats or hazards.” (DHS, 2016) This Framework includes 11 protection core capabilities:

1. Planning
2. Public Information and Warning
3. Operational Coordination
4. Access Control and Identity Verification
5. Cybersecurity
6. Intelligence and Information Sharing
7. Interdiction and Disruption
8. Physical Protective Measures
9. Risk Management for Protection Programs and Activities
10. Screening, Search, and Detection
11. Supply Chain Integrity and Security (DHS, 2016)

Evacuation Planning

For many communities, one of their most important planning considerations is how they will evacuate citizens in the event of a major disaster. For disasters where advanced notice of a hazard event is possible (e.g., hurricanes or tsunamis), or for situations where it is essential that all citizens be removed from the affected area as soon as possible after an event has occurred (e.g., terrorist attacks involving weapons of mass destruction), advanced planning is required in order to determine, among other things, activation procedures, the determination of adequate and effective routes, methods of transportation, destinations for those evacuated, security precautions for homes and belongings, adherence by citizens to evacuation orders, and facilitation of the evacuation itself.

While many communities have conducted some form of evacuation planning as part of their basic emergency operations plan, few have been able to conduct a full-scale test that gives them an accurate idea of how the plan will work in a real-life situation. The difficulties that were experienced by local emergency managers in the evacuations from Hurricanes Katrina and Rita in 2005 highlight both the need for evacuation planning and the shortfalls of existing plans. In the Katrina evacuation—the largest in US history, resulting in the displacement of over 1.3 million people—failure to consider how the evacuation would affect people of lower economic standing resulted in thousands refusing to or being unable to leave. In Hurricane Rita, as determined by a University of Texas study, a strong majority of the deaths (90 of the 113) associated with that storm were a result of the poorly planned evacuation itself.

The City of New Orleans created the City-Assisted Evacuation Plan (CAEP) in the aftermath of Hurricane Katrina that “assists Orleans Parish residents and tourists who cannot self-evacuate during a mandatory city-wide evacuation by providing transportation from designated city evacuation pick-up points to a central transportation and medical triage facility for outbound evacuation to state or federal shelters.” Citizens meeting one or more of the following categories are eligible for City Assistance: Those whose medical needs prevent them from evacuating on their own; those who have no transportation or fuel to get out; those whose transportation is too small to accommodate their family or household, including pets.” Registration for the CAEP is encouraged and available at the city’s website ([CAEP, 2013 http://bit.ly/2fABmqM](http://bit.ly/2fABmqM)).

The City of New Orleans has created a partnership with [Evacuteer.org](#), a non-profit organization to help facilitate future evacuations from the City of New Orleans through the implementation of the CAEP. The [Evacuteer.org](#) sidebar provides a description of this partnership and its workings.

Evacuteer.org

Evacuteer.org is a non-profit organization incorporated by the State of Louisiana on Jun. 8, 2009, and approved as a 501(c)3 tax-exempt entity by the

IRS on Aug. 17th, 2009.

Mission: Evacuteer.org annually recruits, trains, and manages 500 evacuation volunteers (Evacuteers) who assist with New Orleans' public evacuation option called City Assisted Evacuation (CAE). We serve to prepare and register evacuees, ensuring their ability to evacuate safely and with dignity.

City Assisted Evacuation occurs when a mandatory evacuation is called in Orleans Parish. It will begin approximately 54 hours before a Category-3 hurricane or higher makes landfall, and will run for 24 hours straight. We expect approximately 35,000 New Orleanians without a safe or alternative option to evacuate will use this process.

History: Evacuteer.org was formed in order to help fill the needs identified after the first activation of CAE during Hurricane Gustav (Sep. 2008). Through an existing agreement with the City of New Orleans Office of Homeland Security and Emergency Preparedness (NOHSEP), the City of New Orleans has authorized Evacuteer.org to manage all volunteers who work within the CAE at 17 neighborhood pick-up points, at the Union Passenger Terminal for transportation connections, and at City Hall to assist with 3-1-1 hotline operation.

Evacukids Program

Evacuteer offers a flexible environmental science and hurricane preparedness children's program called EvacuKids, which targets underserved youth and children. Despite the annual threat of hurricanes and flooding, New Orleans' schools do not offer any standard preparedness curriculum. EvacuKids works to train our city's children valuable lessons in hurricane preparedness and hazard knowledge relevant to living on the Gulf. We offer:

- Six one-hour PowerPoint presentations paired with hands-on experiments and worksheets, including the Red Cross Pillowcase Project
- Trained young professionals from local universities and community organizations who are vetted and ready to serve
- In-school, after-school, or summer programming—we can accommodate your needs

Curriculum available for grades 3–5

Evacuteer Community Preparedness & Outreach

At Evacuteer, we don't just support the New Orleans community, we are a part of the community. We are all residents too. Some of us even lifelong residents. Our role in the community is important and we are not just here for the very rare mandatory evacuation call, we also support the New Orleans community by helping citizens understand how to be prepared for an emergency and providing them the tools to do so.

Is your organization holding a neighborhood or community meeting or event? Complete the form below to request a representative from Evacuteer attend your event. We can present preparedness training and ideas, discuss the City Assisted Evacuation process or be present for tabling with information on

training, the CAE and volunteering with Evacuteer.

Source: Evacuteer.org, 2016, <http://bit.ly/2eFjwhj>.

The US Department of Transportation conducted a study of the evacuation plans in the Gulf Coast region where hurricanes are most likely to strike. The study looked at each of the five Gulf Coast states (Alabama, Florida, Mississippi, Louisiana, and Texas) and 58 of the counties and parishes in them to determine where the weaknesses lay in their evacuation plans and to learn from any best practices that existed. According to this study, seven key elements can be used to measure the comprehensive nature of a plan:

- Decision making and management
- Planning
- Public communication and preparedness
- Evacuation of people with special needs
- Operations
- Sheltering considerations
- Mass evacuation training and exercises

The study found that while most of the plans were effective in terms of creating standard operating procedures, conducting exercises and drafting after-action reports, updating plans, and defining evacuation direction and control, they were often weak in the following areas:

- Keeping evacuees informed during the evacuation
- Providing for evacuating individuals with various special needs
- Returning evacuees to their homes
- Using contraflow (reversed lane) operations
- Providing for the care and protection of animals (DOT, 2006)

Critical Thinking

Why is evacuation planning so difficult? What kinds of things can go wrong during an actual evacuation? What do you think can be done to minimize these potential setbacks?

Emergency Planning for Access and Functional Needs Populations

Traditionally, emergency planning has looked at a homogenous population thought of collectively as the “community.” However, communities are made up of distinct individuals and groups, each with unique conditions that define their lives, their interactions, and their abilities. Several of these individuals have access and functional needs that emergency planners must consider when drafting emergency operations plans and other emergency procedures in the community. In the absence of such consideration, any plans are likely to fail these individuals, as their provisions will be irrelevant or inappropriate. Each community must assess its own population to determine what access and functional needs exist and how those needs must be addressed in the emergency plan if it is to adequately protect all of the community’s citizens equally.

In considering access and functional needs populations, planners must work with individuals with access and functional needs such as those individuals with cognitive, physical, sight, and hearing disabilities, and non-English speakers or representatives of groups who work with these populations such as senior citizens and children advocacy groups. (See “Moving Beyond Special Needs” sidebar) By including these key stakeholders, the planners are better able to adjust existing policies or to create new policies that allow for the safety and security of these groups before, during, and after emergency events. Consideration of access and functional needs populations is something that must be addressed in all four phases of emergency management. The following are examples of considerations that must be made:

- Foreign language training and materials
- Registry of functional needs individuals’ locations and emergency requirements and access to them
- Emergency equipment and forms of transportation
- Communications equipment or methods
- Alternate (nontraditional) warning media and procedures
- Protection and service measures at shelters and during evacuations
- Inclusion of certain prescription drugs and physical support devices in shelters and other emergency facilities
- Education measures targeting newcomers and transient populations
- Targeted transportation and holding facilities for incarcerated evacuees or victims
- Training for emergency responders in working with and caring for individuals with access and functional needs

Moving Beyond “Special Needs”—A Function-Based Framework for Emergency Management

and Planning

(Presented below are excerpts from a journal article published in 2007)

The 2005 hurricane season in the United States reinforced the need to discontinue the use of all-inclusive labels such as *special needs* for disaster planning. Combining groups too broadly translates into imprecise planning and, as a result, emergency response failures. As the term is typically used, the special needs population makes up at least half of the US population. The label *special needs* generally incorporates people whose functional needs include assistance with communication, medical needs, maintaining functional independence, supervision, and transportation (C-MIST). Not receiving C-MIST support when it is needed can have severe consequences for those who need it. As a result, to ensure that the needs of this large segment of the population receive necessary attention, it is vital that disaster preparation include a plan for operationalizing support for the population's needs.

The purpose of this article is to begin to identify the groups included in the population of special needs that require specific disaster planning above and beyond the average person. In addition, we explore a framework for disaster planning based upon identifying and addressing functional needs through the use of functional supports, leadership, service delivery, and training.

Individuals with disabilities include those with one or more activity limitations, such as a reduced capacity or inability to see, lift, walk, speak, hear, learn, understand, remember, manipulate or reach controls, and/or respond quickly. Some limitations are quite visible. For example, it is apparent when people use mobility devices, such as wheelchairs, canes, crutches, and walkers. Other limitations, such as heart disease, respiratory, emotional, or psychiatric conditions, arthritis, reduced stamina, significant allergies, asthma, multiple chemical sensitivities, and some visual, hearing, and cognitive disabilities, may be less evident.

Effective planning and incident response, which includes people with a wide range of function-based needs, should be woven into the fabric and the culture of emergency management and disaster planning. As long as disability and other special needs groups are viewed as unique or special, the system's existing inefficiencies will continue.

This article proposes a flexible framework built on five essential function-based needs: communication, medical needs, maintaining functional independence, supervision, and transportation (C-MIST). The intent is to reduce negative consequences and improve readiness in all planning, preparedness, response, recovery, and mitigation activities. Addressing functional limitations includes both people who identify as having a disability and the larger number of people who do not identify as having a disability but who have a functional limitation in hearing, seeing, walking, learning, language, and/or understanding.

It is critically important to move beyond the category of *special needs* to a more effective, accurate, and flexible framework. A common framework based on essential functional needs is the crucial element for the following:

- Building appropriate levels of capacity for disaster preparation, emergency response processes, procedures, and systems
- Adopting appropriate guidelines and protocols for resource management
- Strengthening service delivery and training
- Improving response successes
- Preventing secondary conditions and reducing institutionalization and the use of scarce, expensive, and intensive emergency medical services and the use of “downstream” services
- Allowing disaster services to integrate the value that everyone should have the chance to survive
- Translating lessons documented into lessons learned and applied

Source: Kailes, June Isaacson and Alexandra Enders. 2007. Moving Beyond “Special Needs” -A Function-Based Framework for Emergency Management and Planning. *Journal of Disability Policy Studies*, VOL. 17/NO. 4/2007. 2007. <http://bit.ly/2e76oWa>.

During many, if not all, of the recent US disasters, it was apparent that certain access and functional needs populations exhibited a greater degree of vulnerability and, as a result, experienced a proportionally greater impact than other groups affected by the same event. Two specific examples include the 1995 heat wave in Chicago, in which almost all of the 600 victims were elderly poor, and Hurricane Katrina, where most of the residents who failed to evacuate (and died as a result) were the urban poor, including a large number of senior citizens. In the recovery phase of Katrina (as well as many other recent major disasters), it was the illegal immigrant population, who had never registered for services out of fear of deportation, who suffered to a greater degree. To an increasing degree, however, campaigns advocating for increased consideration of special needs populations in emergency planning, initiated primarily by activist groups representing the individual groups, have accelerated the acceptance by emergency planners of the planning need throughout the United States.

Ready.gov

Preparing Makes Sense for People With Disabilities and Other Access and Functional Needs

Each person's needs and abilities are unique, but every individual can take important steps to prepare for all kinds of emergencies and put plans in place. By evaluating your own personal needs and making an emergency plan, you can be better prepared for any situation.

A Commitment to Planning Today Will Help You Prepare for Any Emergency Situation

- Consider how a disaster might affect your individual needs
- Plan to make it on your own, at least for a period of time. It's possible that you will not have access to a medical facility or even a drugstore
- Identify what kind of resources you use on a daily basis and what you might

- do if they are limited or not available
- *Build a kit* with your unique consideration in mind. What do you need to maintain your health, safety, and independence?
If you or someone close to you has a disability or other access or functional need, you may have to take additional steps to protect yourself and your family.
Find out about individual assistance that may be available in your community. Register in advance with the office of emergency services, the local fire department, other government agencies or non-profit groups. Tell them of your individual needs or those of a family member and find out what assistance, help, or services can be provided.

Who Are Individuals With Access and Functional Needs?

- Those who are deaf or hard of hearing may need to make special arrangements to receive emergency warnings.
- Single working parents and those with limited English proficiency may need help planning for disasters and emergencies. Community, faith-based, and cultural groups may be able to help keep people informed.
- People without vehicles may need to make arrangements for transportation.
- People with special dietary needs should take precautions to have an adequate emergency food supply.

Source: Ready.gov, 2013, <http://1.usa.gov/1EmsOVo>.

Critical Thinking

What specific measures should be taken by emergency planners before the next disaster strikes to be better prepared to assist individuals with access and functional needs including the disabled, children, and the elderly?

Preparedness Equipment

Emergency management organizations rely upon an incredibly diverse range of equipment categories with which they perform the response roles assigned to them. These categories of equipment, which include (among many others) personal protective equipment (PPE), firefighting apparatus, and communications systems, are described in detail throughout this book.

Equipment is very important in the preparedness phase because it is during this phase that equipment needs are identified, equipment is purchased, and staff is trained in the use of the equipment.

The federal government, through FEMA, facilitates the acquisition of significant amounts of emergency management equipment at the state and local levels through a number of emergency management grant vehicles with an equipment focus. In order to inform communities about the specific categories and specifications of equipment that are eligible under these grants, FEMA created the authorized equipment list (AEL). The AEL is a virtual catalog of the many different types of equipment that responders are likely to require in the course of their response and recovery efforts. This list indicates a continued federal focus on the terrorism hazard, even though most of these grant programs maintain all-hazards eligibility. Access to the AEL can be found at <http://bit.ly/2fhRRGX>.

Education and Training Programs

Education and training have always been integral to the emergency services. Firefighters receive their education at the fire academy, police officers get theirs at the police academy, and EMS officials get medical and emergency first aid training from both public and private sources. However, a revolution of sorts has occurred in the provision of education and training in the emergency management profession. Only a few decades ago, emergency management was an outgrowth of the emergency services and a position for which little or no training was provided (nor was it felt that additional training was needed).

The advent of emergency management training and education coincided with the creation of FEMA in 1979, which touched off the development of the practice as a profession. At that time, few officials (both within and outside the traditional emergency services) had any background in emergency management, and few people were dedicated to the function even within major city governments. At the nation's universities, few programs provided even minor degrees or certificates in the field, and only a handful of colleges offered such courses.

At first, it was FEMA that defined the profession as one that required specific academic courses and training. FEMA's Emergency Management Institute became the focus of these efforts. Working with practitioners at select colleges and universities that offered similar programs, FEMA defined the core competencies of emergency management professionals and developed a definition for an "emergency management curriculum."

It was the events of Sep. 11, 2001, however, that truly transformed emergency management training and education. Since then, primarily due to an explosion in funding available and jobs created in the growing emergency management marketplace (both public and private), scores of colleges and universities have begun to offer traditional emergency management degrees, and hundreds of schools offer emergency management classes. Many private training facilities have opened to meet the expanding training needs of the profession, and traditional emergency services academies have expanded their curriculums to accommodate the growing number of courses required by full-time emergency management professionals.

The FEMA Emergency Management Institute and National Fire Academy

Since its inception in 1979, FEMA has emerged as a leader in providing direction for the education and training of emergency management professionals through both the development and provision of actual training courses and the development of higher education courses and materials. The Emergency Management Institute (EMI) and the National Fire Academy (NFA), both in Emmitsburg, Maryland, serve the training and educational needs of hundreds of thousands of firefighters, fire officers, emergency managers, and others. These institutions offer training program courses whose primary objective is to enhance emergency management practice in the United States. At present, approximately 10,000 students are enrolled in EMI's resident courses. Nonresident courses, which are administered by the states through their emergency management agencies (under a cooperative agreement with FEMA), accommodate an additional 100,000 students each year. Emergency management exercises that are supported by EMI draw over 150,000 participants annually, and through the range of independent study program courses administered through the Institute's website, several hundred thousand other individuals receive training.

Three EMI programs of note are the Integrated Emergency Management Course (IEMC) curriculum, the Disaster-Resistant Jobs courses, and several Train-the-Trainer courses that are available in many different subject areas. The IEMC is a set of courses for public officials that cover all aspects of the community emergency management function. Community officials from Oklahoma City participated in the IEMC program just months before the Alfred P. Murrah building terrorist bombing in 1995, and they credit the lessons they learned through the program with helping them to respond quickly and effectively in the aftermath of that event. The Disaster-Resistant Jobs course was developed in cooperation with the Economic Development Administration (EDA) of the US Department of Commerce and is designed to "help small and medium-sized communities protect the economy from the effects of catastrophic events." This course was developed in response to the devastating impact the 1997 floods had on the city of Grand Forks, North Dakota. The EDA and FEMA recognized that more economic development planning could be done to reduce the impacts of future disasters on local economies.

FEMA's EMI Higher Education Project works to establish and support emergency management curriculum in junior colleges, colleges, and universities. The project has developed a prototype curriculum for associate degrees in emergency management. Currently, for emergency management, the FEMA College List, last updated Aug. 31, 2015, includes "72 Certificate, Diploma, Focus-Area, Minor in Emergency Management Collegiate Programs, 54 Schools Offer Associate Degree Programs, 67 Schools Offer Bachelor Degree Programs, 92 Schools with Master-Level

Concentrations/Tracks/Specializations/Emphasis Areas/Degrees, 35 Emergency Management Programs Under Investigation or Development, and 9 Schools Offer Doctoral-Level Programs." (FEMA, 2015) In addition the College List includes "163 Schools Offer Homeland Security/Defense/Terrorism/Critical Infrastructure Programs, 11 Schools Investigating or Developing Homeland Security and Terrorism Programs, 16 Schools Offer International Disaster Management and Humanitarian Assistance Programs, 28 Schools Offer Public Health and Medical Related Programs, and 42 Schools Offer Other Related Programs." (FEMA, 2015)

The National Fire Academy (NFA) proclaims that, "through its courses and programs, the National Fire Academy works to enhance the ability of fire and emergency services and allied professionals to deal more effectively with fire and related emergencies." The NFA was first created in 1975 to serve as the primary delivery mechanism for the fire training efforts of the congressionally mandated US Fire Administration (USFA). Since that time, the NFA estimates it has trained more than 1.4 million students. Like EMI, the NFA delivers many of its courses in Emmitsburg, Maryland and across the country in cooperation with state and local fire training organizations and local colleges and universities.

The NFA's on-campus programs target middle- and top-level fire officers, fire service instructors, technical professionals, and representatives from allied professions. Any person with substantial involvement in fire prevention and control, emergency medical services, or fire-related emergency management activities is eligible to apply for NFA courses. The NFA also delivers courses using CD-ROMs, their simulation laboratory, and the Internet.

Public Preparedness Education

Perhaps the most difficult component of emergency management preparedness training is the one that focuses on the general public. Public preparedness education, also called risk communication, is a field that has seen vastly mixed success. One of the greatest emergency management public education efforts came out of the civil protection era when the government sought to protect its citizens from the assumed risk of aerial bombing from enemy governments. This campaign focused on the notorious “air raid drills” that instructed children on how to protect themselves by crouching under their desks. Since that time, there has been a flurry of mass communication in the emergency management and preparedness spectra, but very little has come close to achieving such widespread behavioral change. Public education efforts are not very successful for two reasons: First, most campaigns are conducted by emergency managers with understandably little training in the highly complex social marketing and public education disciplines. The field is just learning the value of a systematic or academic approach to the task, and improvements in efficacy can be expected as a result. Second, it is common knowledge that the public faces myriad risks on a daily basis beyond what is being communicated, and many of those daily hazards, as they are often called, take precedence over any major disaster that has little likelihood of ever occurring (as well as many other risk perception factors that prevented widespread success) to individuals. There are, of course, individual success stories, including the stop, cover, and roll fire safety drills and the stop, drop, and cover earthquake drills, but research has shown that most families still fail to take even the most basic preparations to protect themselves from major disasters even though a highly visible succession of disasters has befallen the nation.

FEMA has expended much effort over the years to manage the public education reform. Before 9/11, FEMA’s training efforts consisted primarily of publishing educational materials for teachers, community centers, and other organizations. After the terrorist attacks, however, these efforts expanded greatly through the establishment of a well-publicized preparedness website developed by FEMA called Ready.gov. This website provided preparedness information on what FEMA considered the three important preparedness responsibilities of all citizens and businesses: get a kit, make a plan, and stay informed. Unfortunately, the site never caught on, and few people even looked at it.

FEMA also published the preparedness guide, *Are You Ready?* This is a downloadable and printable step-by-step guide that discusses the risks people face today and how they can mitigate them. FEMA also published an instructor’s guide so the book can be used for a class instead of just being read (which can be much less effective). A video titled *Getting Ready for Disaster* also accompanies the guide, providing another alternative channel for preparedness learning. Each of these resources can be found and accessed on the FEMA “Are You Ready” website at <http://bit.ly/2fAHxLw>.

One of the success stories in the public education domain is the growing network of Community Emergency Response Team (CERT) programs operating around the country. CERT was developed with the belief that after a major disaster, first responders are likely to be quickly overwhelmed and therefore unable to meet the demand for certain services. Factors such as the presence of mass numbers of casualties, failures in infrastructure (such as communication systems), and other confounding variables like road blockages will prevent equitable access to emergency assistance. In these situations, people will have to rely on one another for help to meet their immediate lifesaving and life-sustaining needs. By training members of the general public to perform many of these functions that are normally assumed by the emergency services, the scope of preparedness within the community increases greatly, and vulnerability to hazard risk is reduced. Therefore, CERT's goals are as follows:

1. Present citizens with the facts about what to expect following a major disaster in terms of immediate services.
2. Give the message about their responsibility for mitigation and preparedness.
3. Train them in needed lifesaving skills, with an emphasis on decision-making skills, rescuer safety, and doing the greatest good for the greatest number.
4. Organize teams so they are an extension of first-responder services, offering immediate help to victims until professional services arrive.

The Community Emergency Response Team (CERT) concept was developed and implemented by the Los Angeles City Fire Department (LAFD) in 1985. The Whittier Narrows earthquake in 1987 underscored the area-wide threat of a major disaster in California. Further, it confirmed the need for training civilians to meet their immediate needs. As a result, the LAFD created the Disaster Preparedness Division to train citizens and private and government employees.

The training program that the LAFD initiated was recognized for its ability to further the process through which citizens understand their responsibility in preparing for disaster. It also increased their ability to safely help themselves, their family, and their neighbors. FEMA recognizes the value of this program and helped to expand its reach nationwide. The EMI and the National Fire Academy adopted and expanded the CERT materials, believing them to be applicable to all hazards. Today, CERT training is conducted within easy reach of almost every community in the country.

CERT prepares unaffiliated citizens to respond to and cope with the aftermath of a disaster. CERT groups are provided with the skills and knowledge to provide immediate assistance to victims in their area, organize spontaneous volunteers who have not had any training, and collect disaster intelligence that will assist professional responders with prioritizing and allocating resources following a disaster. Since 1993, when FEMA made this training available nationally, communities in almost all states and territories have conducted CERT training. The CERT course is delivered in the community by a team of first responders who have the requisite knowledge and skills to instruct the sessions. The CERT training for community groups usually is delivered in two-and-a-half-hour sessions, one evening per week, over a seven-

week period. CERT is maintained by the FEMA Community Preparedness Division, which also runs the Citizen Corps Program that oversees CERT ([Fig. 4.2](#)).



FIGURE 4.2 Oakland, California, Aug. 13, 2012—FEMA Region IX Regional Response Coordination Center during an earthquake exercise. The Thunderbolt exercise was a “no notice” test for the staff of the Region IX office. Exercises like the Thunderbolt help FEMA to assess its response capabilities. *Photo by Mary Simms.*

Emergency Management Exercises

Exercises provide an opportunity to evaluate the efficiency and effectiveness of the plan and its components and to test the systems, facilities, and personnel involved in implementing the plan. Exercises are conducted at all levels of government, in the private sector, at educational facilities, and more. FEMA defines an exercise as “a controlled, scenario-driven, simulated experience designed to demonstrate and evaluate an organization’s capability to execute one or more assigned or implicit operational tasks or procedures as outlined in its contingency plan.” These are the common categories of emergency management exercises ([Coppola, 2006](#)):

- *Drill.* A controlled, supervised method by which a single disaster management operation or function is practiced or tested
- *Tabletop exercise.* Designed to allow officials to practice components of or the full activation of the emergency response plan within the confines of a controlled, low-stress discussion scenario
- *Functional exercise.* Tests and practices response capabilities by simulating an event to which responsible officials must respond. Unlike a drill, which tests one function or activity, the functional exercise tests a full range of associated activities that together fulfill a greater overall response purpose
- *Full-scale exercise.* A scenario-based event that seeks to create an atmosphere closely mimicking an actual disaster. All players required to act during a real event, as outlined in the EOP, are involved in the full-scale exercise, working in real time and using all of the required equipment and procedures ([Fig. 4.3](#))



FIGURE 4.3 Guam, Jun. 7, 2010—Government of Guam and Department of Defense personnel participate in the Typhoon Pakyo Tabletop Exercise in Guam.

FEMA supports exercises at all jurisdictional levels through the Homeland Security Exercise and Evaluation Program (HSEEP; pronounced “hee-sep”). HSEEP was created to provide guidance and standardization to the exercise efforts of emergency management organizations and to develop a framework for evaluation. HSEEP has met both praise and complaint, since it is the most comprehensive tool of its kind, but many jurisdictions feel that it is just another way the federal government is trying to dictate actions at the local level. This, in part, is due to the fact that federally funded exercises must comply with HSEEP regulations and standards to be covered under emergency management grant programs, which are the only option for funding such exercises for the majority of departments. HSEEP also ties together other emergency management doctrines that have not met uniform acceptance across all jurisdictions, including that of the National Incident Management System (NIMS) and the National Response Framework (NRF), which must be tested in the course of exercise conduct.

FEMA requires HSEEP compliance for grant eligibility. *Compliance* is defined as adherence to specific processes and practices for exercise program management and exercise design, development, conduct, evaluation, and improvement planning. Four specific performance requirements are established in the HSEEP policy and guidance documentation:

1. Conduct an annual training and exercise planning workshop, and maintain a multiyear training and exercise plan (TEP).
2. Plan and conduct exercises in accordance with the guidelines set forth in the HSEEP policy.
3. Develop and submit a properly formatted after-action report/improvement plan.
4. Track and implement corrective actions identified in the AAR/IP.

The penultimate emergency management exercise series is the DHS-supported National Level Exercise (NLE) program. The NLE program, formerly called TOPOFF (for Top Officials), is a full-scale exercise held once a year that tests the response to major disaster events spanning states, regions, and across international borders. Traditionally, NLE exercises have focused on terrorism hazards. However, in 2011, NLE for the first time focused on a natural hazard: a major earthquake on the New Madrid Fault Zone in central United States. NLE is maintained by the DHS National Exercise Program which provides the coordination and planning for federal, regional, and state exercise activities beyond what the states conduct themselves. NLE predates DHS because the first TOPOFF exercise was held in May 2000 to test a simultaneous biological attack in Colorado and a chemical attack in New Hampshire. Since that time, the following exercises have been conducted:

- TOPOFF 2: Conducted in May 2003, tested a simultaneous radiological attack in Washington State and a biological attack in Illinois.
- TOPOFF 3: Conducted in Apr. 2005, tested a simultaneous chemical attack in Connecticut and a biological attack in New Jersey.
- TOPOFF 4: Conducted in Oct. 2007, tested simultaneous radiological attacks in Oregon, Arizona, Guam, and Washington, DC.
- NLE 2009: Conducted in Jul. and Aug. 2009, this exercise focused exclusively on the prevention of a terrorist attack around the country (but focused on Washington, DC, Arkansas, Louisiana, New Mexico, Oklahoma, and Kansas).
- NLE 2010: Conducted in May 2010, focused on the detonation of a nuclear device.
- NLE 2014: Conducted between Mar. and Jun. 2012 included four exercises focused on information exchange, cyber incident management/virtual effects, NLE Capstone/cyber physical effects and continuity exercise/eagle horizon.

National Exercise Program (NEP)

The (National Exercise Program) NEP serves as the principal mechanism for examining the preparedness and readiness of the United States across the entire homeland security and management enterprise. The purpose of the NEP is to design, coordinate, conduct, and evaluate exercises that rigorously test the Nation's ability to perform missions and functions that prevent, protect against, respond to, recover from, and mitigate all hazards. As a component of the National Preparedness System (<http://bit.ly/2fhRxYP>), the NEP provides a consistent method to examine and validate federal and whole community (<http://bit.ly/2fAL7oR>) partner core capabilities, which in turn indicate the

Nation's progress in reaching the National Preparedness Goal (<http://bit.ly/2fmY68A>).

Each Program cycle consists of a 2-year, progressive schedule of exercises that are selected based on their support to the Goal, and the Program's *Principals' Objectives*. The types of exercises selected into the program may include facilitated policy discussions, seminars and workshops, tabletop exercises, modeling and simulation, drills, functional exercises, and full-scale exercises. All of which may be sponsored by organizations from any level of government, non-governmental and private sector, and the whole community.

All Program exercises must support one or more of the Principals' Objectives (PO). The Principals' Objectives are high-level objectives based on national preparedness priorities across the homeland security enterprise. Currently, there are four Principals' Objectives:

- PO #1: Exchange intelligence, information, data, or knowledge to enable timely and informed decision-making prior to and during an incident that threatens the security of the Nation
- PO #2: Identify threats and hazards and share prompt, reliable, and actionable risk information with the public, including actions to be taken and assistance made available during the onset of any hazard that threatens the security of the Nation
- PO #3: Establish and maintain a unified and coordinated operational structure and process, capable of identifying, prioritizing, and delivering resources across all hazards and lead-Federal agency authorities, including catastrophic incidents where a Stafford Act declaration is not likely and domestic response to foreign nations overwhelmed by disaster
- PO #4: Establish and maintain plans, authorities, responsibilities, and coordination capabilities that support the recovery of local communities affected by catastrophic disasters

Source: FEMA, 2016, <http://bit.ly/2ejKfiF>.

Evaluation and Improvement

It is through evaluation and assessment that those responsible for response and recovery are best able to refine preparedness capabilities. It is through the evaluation process that capabilities are kept on track and improved over time. There are several programs by which emergency management evaluation may be conducted. Here are a few of the more common ones:

- **EMAP:** Probably the most recognizable organizational preparedness evaluation effort, the Emergency Management Accreditation Program (EMAP) evaluates state, territorial, and local emergency management agencies according to the peer-reviewed Emergency Management Standard. EMAP is funded by FEMA but maintained by an independent nonprofit organization. Agencies that are interested in accreditation pay a fee for evaluation by independent reviewers.
- **SPR:** The State Preparedness Report (SPR) was developed to satisfy the requirements for state-level emergency management disaster preparedness defined by the Post-Katrina Emergency Management Reform Act of 2006 (PKEMRA). Under this initiative, states and territories submit an annual SPR as a means to report on the progress, capabilities, and accomplishments of their all-hazards preparedness program. This report is designed to enable states to communicate to Congress current accomplishments in meeting the preparedness priorities and capabilities defined by DHS and how they will continue to increase statewide preparedness. States develop their individual SPRs using a standard template, wherein they address the actions they have taken to address the eight National Priorities (as identified in the National Preparedness Guidelines):
 - a. Implement the NIMS and the NRF.
 - b. Expand regional collaboration.
 - c. Implement the National Infrastructure Protection Plan (NIPP).
 - d. Strengthen information sharing and collaboration capabilities.
 - e. Strengthen interoperable and operable communications capabilities.
 - f. Strengthen chemical, biological, radiological, nuclear, explosive (CBRNE) detection, response, and decontamination capabilities.
 - g. Strengthen medical surge and mass prophylaxis capabilities.
 - h. Strengthen planning and citizen capabilities.
- **TCL:** The Target Capabilities List (TCL) is a FEMA-administered program that identifies and defines capabilities that may be needed to respond to the various hazard risks facing the country. Under TCL, capabilities need not be maintained by each individual agency but rather must be something that the agency is able to draw upon from within its own ranks or from any mutual aid, Emergency Management Assistance Compact (EMAC), or other partners. Under TCL, jurisdictions are expected to develop and maintain capability at levels that reflect the differing risk and needs throughout the country. The TCL identifies 37 distinct capabilities developed in consultation with representatives from all levels of government, the private sector, and

nongovernmental organizations. Users refer to the TCL to design plans, procedures, training, exercises, and evaluations that develop and assess capacity and proficiency to perform their assigned missions and tasks in major events. The TCL is intended to serve as a foundational reference document and planning guide to achieve national preparedness.

- **NIMSCAST:** The NIMS Compliance Assistance Support Tool (NIMSCAST), maintained by the FEMA National Preparedness Directorate, is a system that allows organizations in the emergency management community to self-report on their progress in implementing the National Incident Management System (NIMS).
- **DEC Communications Project:** The Disaster Emergency Communications (DEC) Communications Project is a FEMA-administered 28-state initiative that analyzes emergency communications. DEC's mission focus is the provision of communications capabilities when landlines and cellular networks are damaged or congested, particularly during the first 96 hours of a disaster, for situational awareness and command and control, state and local first responders, and emergency responders performing disaster missions. At the conclusion of scheduled state assessments, an assessment team drafts a detailed report that encompasses communications requirements, proposed mitigation strategies, negotiated mission assignments, and acquisition strategies. The team also writes regional emergency communications plans and equipment specifications.
- **CAS:** The Comprehensive Assessment System (CAS) is a FEMA-administered emergency management assessment system that identifies issues and shortfalls across the spectrum of homeland security operations with respect to resource allocation and the performance of specific all-hazards capabilities at the federal, state, tribal, and local jurisdictional levels. Mandated by PKEMLRA, CAS assesses compliance with the National Preparedness System, the National Incident Management System (NIMS), and other related plans; assesses resource needs; and assesses the performance of training, exercises, and operations. FEMA hopes that CAS will one day function as a central repository for national preparedness data.
- **CEM:** Individual emergency management preparedness capabilities may be evaluated through the Certified Emergency Manager (CEM) program maintained by the International Association of Emergency Managers (IAEM). This fee-based program ensures that individuals have received a requisite array of courses and experience that prepare them for the demands of an actual disaster response. Those passing certification are permitted to use the acronym *CEM* in their professional title.

Preparedness: A Whole Community Effort

Emergency and disaster preparedness is conducted at all levels of government, but it is through the FEMA National Preparedness Directorate that a national-level strategy for preparedness is developed, communicated, and supported. Following the failed response to Hurricane Katrina, Congress determined, through the Post-Katrina Emergency Management Report Act of 2006, that there was a need for a national direction on emergency preparedness to ensure that the national government, states, counties, parishes, cities, towns, and communities were equipped with the knowledge, funding, and guidance to ensure proper response and recovery from major disaster events at all government and organizational levels. As a result, the National Preparedness Directorate (NPD) was established on Apr. 1, 2007 in order to oversee coordination and development of the strategies necessary to achieve these goals. NPD was established to provide preparedness policy and planning guidance and to help build disaster response capabilities. As a FEMA directorate, NPD has wide leverage to develop and institute preparedness programs that include training courses, national policy development and state/local policy guidance, and the planning and conduct of exercises, including the National Level Exercises (NLEs) described previously.

The requirements of a national-level preparedness effort are guided by the National Response Framework (NRF), which superseded the National Response Plan (NRP) in Jan. 2008. The NRF was released to establish a comprehensive, national, all-hazards approach to domestic incident response and to provide clear guidance over the integration of community, state, tribal, and federal response efforts. In order to achieve the capability to conduct the necessary actions prescribed within this framework, FEMA has released a series of doctrines guiding preparedness at a strategic level. Homeland Security Presidential Directive-8 (HSPD-8) directed the secretary of Homeland Security to develop a national domestic all-hazards preparedness goal. As part of that effort, in Mar. 2005, DHS released the Interim National Preparedness Goal.

According to an Oct. 2015 post on the FEMA website, “The National Preparedness Goal defines what it means for the whole community to be prepared for all types of disasters and emergencies. The goal itself 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.*’ These risks include natural hazards such as hurricanes and pandemic influenza, accidental hazards such as dam failures and chemical spills, and manmade threats such as acts of terrorism and cyber attacks.” (FEMA, 2015) The National Preparedness Goal describes 32 Core Capabilities and is organized into 5 mission areas: Protection, Prevention, Mitigation, Response and Recovery. ([FEMA, 2015a](#))

According to FEMA, “The first step is to understand the National Preparedness Goal. Once familiar with the Goal, you’re ready to learn more. You’ll find resources and information such as:

- National Preparedness System (<http://bit.ly/2fhRxYP>). This outlines an organized process for the nation's preparedness efforts.
- National Incident Management System (<http://bit.ly/2e7b52n>). This provides a systematic, proactive approach to guide organizations in managing all types of incidents.
- National Planning Frameworks (<http://bit.ly/2eFiodN>). The National Planning Frameworks represent an important step forward in describing how all levels of government, the private sector, nongovernmental organizations, and the public at-large work together to build and sustain the capabilities we need to prevent, protect, mitigate against, respond to and recover from those threats and hazards.
- National Preparedness Report (<http://bit.ly/2f0cFID>). Released annually, this report shows our nation's progress on the Goal—our strengths and opportunities for improvement." ([FEMA, 2015b](#))

According to FEMA, "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." (FEMA, 2016) See 2016 National Preparedness Report Cross-Cutting Findings sidebar.

2016 National Preparedness Report 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.

- 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.
- 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.
- 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.

Source: FEMA, 2016 National Preparedness Report, <http://bit.ly/2f0cFID>.

Preparedness Grant Programs

The FEMA National Preparedness Directorate currently administers a wide range of grant programs that target preparedness efforts at all government levels, though primarily those of states, territories, tribes, and local jurisdictions. These programs differ according to their goals, the agencies eligible to apply for them, and the activities and equipment eligible to be funded. Some of the grant programs that received funding in Fiscal Year 2016 include the following.

Emergency Management Performance Grant Program: \$350.1 Million Available in Fiscal Year 2016

The EMPG was created to assist state and local governments in enhancing and sustaining all-hazards emergency management capabilities. Eligible applicants include the states and territories. State administrative agencies or state emergency management agencies (EMAs) are eligible to apply directly to FEMA for EMPG funds on behalf of state and local emergency management agencies. This grant has a 50% federal and 50% state cost share, cash or in-kind match requirement. Grant information can be found at <http://bit.ly/2fhRzxd>.

The Homeland Security Grant Program

The HSGP is comprised of four separate grant programs, each described here.

State Homeland Security Program (SHSP): \$402 Million Available in Fiscal Year 2016

The HSGP provides funds to build response capabilities at the state and local levels and to implement the goals and objectives included in state homeland security strategies and initiatives in each state preparedness report (see SPR earlier in this chapter). States are required to ensure that at least 25% of SHSP-appropriated funds are dedicated toward law enforcement terrorism prevention-oriented planning, organization, training, exercise, and equipment activities, including those activities that support the development and operation of fusion centers. Only the state government can apply to FEMA for SHSP funds. Each state will receive a minimum 0.35% of the total funds, and the remainder is based on several risk factors (four territories—American Samoa, Guam, the Northern Mariana Islands, and the US Virgin Islands—receive a minimum allocation of 0.08% of the total funds) <http://bit.ly/2fAJSWL>.

Urban Area Security Initiative (UASI): \$580 Million Available in Fiscal Year 2016

According to FEMA, “The UASI program funds addressed the unique risk driven and capabilities-based planning, organization, equipment, training, and exercise needs of high-threat, high-density Urban Areas based on the capability targets identified during the THIRA process and associated assessment efforts; and assists them in building an enhanced and sustainable capacity to prevent, protect against, mitigate, respond to, and recover from acts of terrorism.”

(FEMA, 2016b) The UASI program “allocation methodology for FY 2016 UASI is based on DHS’ risk methodology. Eligible candidates for the FY 2016 UASI program are determined through an analysis of relative risk of terrorism faced by the 100 most populous metropolitan statistical areas (MSAs) in the United States.” (FEMA, 2016b)

Only the state governments may apply for the UASI grant programs, though most of the money is passed directly to the urban areas. <http://bit.ly/2fAJSWL>.

Operation Stonegarden (OPSG): \$55 Million Available in Fiscal Year 2016

OPSG was created to enhance cooperation and coordination among local, state, and federal law enforcement agencies to secure international borders with Mexico and Canada, as well as states and territories with international water borders. Prospective recipients for OPSG include local units of government at the county level and federally recognized tribal governments in the states bordering Canada (including Alaska), southern states bordering Mexico, and states and territories with international water borders. Grant information can be found at: <http://bit.ly/2fAJSWL>.

FY 2012 Port Security Grant Program (PSGP): \$100 Million Available in Fiscal Year 2016

The PSGP seeks to protect critical port infrastructures from terrorism, particularly attacks using explosives and nonconventional threats that could cause major disruptions to commerce. PSGP funds are used to increase port preparedness, primarily to assist ports in enhancing maritime domain awareness; enhancing risk management capabilities to prevent, detect, respond to, and recover from attacks involving improvised explosive devices (IEDs), chemical, biological, radiological, nuclear, explosive (CBRNE), and other nonconventional weapons; as well as training and exercises and transportation worker identification credential (TWIC) implementation. Seven port areas have been selected as Group I (highest risk), and 48 port areas have been selected as Group II. Ports not identified in Group I or II are eligible to apply as a Group III or “all other port areas” applicant. Grant information can be found at: <http://bit.ly/2fAN9oZ>.

Critical Thinking

Why do you think the ODP focuses its preparedness efforts on terrorism?
Should preparedness activities funded by ODP be all-hazards? Why or why not?

Business Continuity Planning and Emergency Management

Business continuity planning (BCP) is the process by which businesses prepare for disasters by identifying the risks to their business processes, their facilities, their employees, and their information, and then take action to reduce that risk. BCP also includes identification and enactment of the processes by which businesses are able to continue to function (even if at a reduced capacity) during periods of disaster such that they are able to remain viable for the long term, and so the products and services they provide to the community and country remain available. BCP is the most effective way for businesses to prepare for emergencies because the process initiates a much greater understanding of how community risk affects the businesses and what will be required of the business (rather than being provided by traditional emergency responders or other entities). BCP, like all preparedness efforts, increases community-wide resilience, since the sooner the business sector is able to get back up and running, the sooner the community is able to recover.

Business disaster planning first began with the information age, and preparedness focused primarily on information storage and retrieval. Since that time, the concept of continuity has evolved in response to a changing environment. Major events have demanded that BCP encompass a growing number of concerns. The terrorist attacks of Sep. 11 showed almost all businesses how a disaster can impact a country at a national level through the ripples of economic and psychological effects. Since 9/11, the following changes have occurred in the BCP sector:

1. Terrorism is given greater consideration as a threat by many businesses, regardless of the business focus or location.
2. BCP has expanded to include concern for the physical safety of employees.
3. BCP may involve the decentralization of business operations.
4. BCP may have to expand its sphere of concern to include the regional impacts of a disaster (including economic) to the area where a business is located.
5. The human relationships that a business depends on for its survival have become a more significant concern.
6. Businesses are striving for zero downtime during disasters by incorporating off-site operations capabilities.
7. Novel approaches are being taken with regards to critical data backup and retrieval.
8. Physical security has become a BCP concern.
9. There is an increased professionalization of the BCP industry, and more and more businesses are employing full-time emergency management and BCP staff.

The events of Sep. 11 raised awareness of the fact that the survival of business depends on many external factors, such as critical infrastructure and transportation systems. The federal government also recognized the importance

of BCP because so much of the nation's public infrastructure was privately owned and therefore independent of most government preparedness efforts. FEMA has begun to work more closely with businesses to bring about preparedness, since businesses are not only the recipients of disaster assistance but are also the providers of many of the products and services needed in the lead-up to and aftermath of disaster events and therefore must be brought into the preparedness and planning process.

The FEMA Private Sector Division in the Office of External Affairs leads up the development of this partnership and initiates various working groups that aim to bring about business sector preparedness and recovery planning activities. For instance, in the 2009 H1N1 pandemic influenza outbreak, the Private Sector Division developed an H1N1 preparedness guide for small businesses, which were particularly susceptible to business closure from the flu outbreak because they depend on such a limited workforce.

In Nov. 2009, FEMA announced the Voluntary Private Sector Preparedness Accreditation and Certification Program (PS-Prep). This program was mandated by legislation that followed 9/11. The PS-Prep Program was created to enhance private sector preparedness by providing a mechanism by which private sector entities could become certified as adequately prepared for disasters. This process involves the development of preparedness standards, of course, that did not exist previously. Participation in the program is completely voluntary, and the government maintains no authority to require businesses to comply with any standard adopted under the program. The following standards were developed and/or adopted:

- ASIS International SPC.1-2009. *Organizational Resilience: Security Preparedness, and Continuity Management System*
- British Standards Institution 25999. *Business Continuity Management: Part 1 (2006) and Part 2 (2007)*
- National Fire Protection Association 1600: 2007. *Standard on Disaster/Emergency Management and Business Continuity Program* ([FEMA, 2016c](#))

The ANSI-ASQ National Accreditation Board (ANAB) was selected to develop and oversee the certification process, manage the accreditation, and accredit qualified third parties to carry out the certification in accordance with the accepted procedures of the program. Private sector organizations, including businesses and critical infrastructure and key resource entities, may apply for certification to the applicable requirements of preparedness standards that have been developed or adopted. Certification, in the context of this program, is confirmation that an accredited third-party certification organization has validated a private sector entity's preparedness to a standard. DHS will then maintain and make public a listing of any private sector entity certified as being in compliance with PS-Prep if that private sector entity consents to such a listing, which would presumably instill greater public confidence in that company.

Business continuity planning, however, is chiefly driven by the private sector itself. For instance, DRI International (DRII), a business continuity planning

institute, provides significant guidance on higher education programs on BCP, supports BCP research, and maintains a capacity to enable businesses to self-assess their preparedness capabilities. DRII, like FEMA, has a certification process through which businesses can prove that they have met a minimum level of preparedness for various hazard risks, thereby instilling confidence among investors and/or shareholders. Other organizations that provide a similar service include Disaster Recovery World, Nonprofit Risk, Business Continuity World, and the Public Entity Risk Institute.

Conclusion

Preparedness consists of four basic elements: preparing a plan, acquiring equipment, training to the plan, and exercising the plan. Preparedness planning at the community level is critical to reducing the effects of disaster events. FEMA sponsors numerous planning, training, and education activities designed to assist communities and states in developing effective preparedness plans and training personnel to implement these plans. Through its National Preparedness Directorate, FEMA helps provide national-level preparedness guidance and significant funding to support preparedness efforts.

Business continuity planning is a significant growth area for the emergency management community. The devastating impacts of Sep. 11 resulted in increased coordination and cooperation between business and emergency managers. The emergency management community has just begun to exploit this opportunity and more than ever before is encouraging businesses to become more active in supporting all phases of emergency management.

Case Studies

FEMA has collected a series of “case studies to demonstrate how states and urban areas across the country use a mix of homeland security non-disaster grant programs to improve preparedness.” Presented in this sidebar are three case studies from the FEMA website accessed on Jun. 23, 2016. Access to this website is available at <http://bit.ly/2etuQiV>.

Case Study 1

New York City Community Outreach Teams

May 16, 2016

Summary

When the Centers for Disease Control and Prevention confirmed the first-ever case of Ebola Virus Disease (EVD) in the United States, New York City (NYC) quickly acted to educate the public about EVD and its associated risks. In support of this effort, the NYC Department of Health and Mental Hygiene (DOHMH) deployed community outreach teams to distribute informational materials and engage the public in discussions about EVD. Supported through \$170,000 in Public Health Emergency Response funds, the teams' efforts alleviated public fears and provided New Yorkers with practical information about how to protect themselves against spreading or contracting EVD. The community outreach teams offer other communities a successful model for sharing emergency preparedness information with the public.

Description

DOHMH initially formed community outreach teams shortly before Hurricane Sandy made landfall in Oct. 2012. In 2014, DOHMH deployed the teams in response to EVD to share information about symptoms and risks with the public across NYC. The teams comprised of a total of 82 individuals with diverse cultural and linguistic backgrounds.

Taking into consideration the increased impact of EVD on citizens with family and friends in EVD-affected countries, the community outreach teams' priority was to target door-to-door outreach to neighborhoods with large West African populations. Where possible, DOHMH identified staff members fluent in the languages most commonly spoken in those neighborhoods. More broadly, the teams sought to make public messaging about EVD accessible to all populations in NYC. The teams distributed and produced over 60 types of educational documents translated into nine languages. Among the documents produced was a palm card entitled, “Ebola: Am I At Risk?” with information on how EVD is transmitted. The teams handed out more than 167,000 palm cards over the course of DOHMH’s public outreach campaign for EVD.

Additionally, the teams organized 100 community events over the course of 3 months. These events provided citizens with opportunities to receive answers

to their questions and concerns about EVD. The community outreach teams brought physicians to the events in order to provide a trusted source for health information. The team also collaborated with elected officials citywide to bring them to town hall meetings and keep them informed of ongoing preparedness activities. In addition to hosting these meetings, the community outreach teams took advantage of existing events and other opportunities to distribute educational documents and speak with concerned citizens, such as participating in the annual African Day Parade and Festival.

The community outreach teams worked quickly to address heightened fears when NYC's first and only EVD case was confirmed on Oct. 23, 2014. The teams immediately went out to the neighborhood where the patient lived to circulate a letter from the DOHMH Commissioner reassuring residents and countering misinformation about ways that EVD is spread.

Through these efforts, the community outreach teams built trust with NYC residents, averted a public panic, and ensured that the populace was well informed and prepared for EVD.

Source: FEMA, <http://bit.ly/2fkGg80>.

Case Study 2

Oklahoma's Regional Response System

Summary

Oklahoma created the Regional Response System (RRS)—a collection of specialized units and equipment—to provide all-hazards response throughout the state within 2 hours of an incident. RRS units have responded to dozens of incidents, including the May 20, 2013 tornado near Oklahoma City.

Description

Oklahoma has a diverse risk profile, geographically dispersed population, and limited local emergency management resources. Nationally the state ranks 3rd in the number of Federal disaster declarations, 50th in state emergency management appropriations, and 49th in number of full-time emergency managers. To address these challenges, the Oklahoma Office of Homeland Security (OKOHS) created a statewide system of specialized units capable of responding to chemical, biological, radioactive, nuclear, and explosive incidents; agriculture emergencies; technical rescue incidents; and natural disasters. RRS units are strategically placed throughout Oklahoma so they can respond to incidents in any area of the state—even the most rural regions—within 2 hours. Local governments provide personnel and maintain the equipment, and OKOHS manages RRS deployments based on the size of the incident and the capabilities required. RRS all-hazards units include bomb squads, Technical Rescue Teams, communications units, and Regional Emergency Medical Services System (REMSS) units. In addition, OKOHS provides RRS personnel specialized response training for their discipline.

When an EF 5 tornado struck communities in Newcastle, Oklahoma City, and Moore on May 20, 2013, the state dispatched RRS assets—including

Technical Rescue Teams, communications assets, and REMSS units—to aid response and recovery operations. Five Technical Rescue Teams searched two schools (Briarwood and Plaza Towers Elementary) that the tornado hit while class was in session. The Communications Leader established an incident communications plan to repair communications breakdowns caused by many agencies communicating with incident command over multiple frequencies.

Oklahoma activated 33 REMSS teams on the afternoon of May 20, which allowed the units to respond immediately after the tornado touched down in the Oklahoma City metropolitan region. A REMSS unit arrived on-scene at the destroyed Moore Medical Center 10 minutes after the tornado passed through the area and established response operations at the nearby Warren Theater. During the 8-hour response operation, REMSS units also provided generator power to the medical station, lighting for citizens and responders in the area, and medical supplies for patient treatment and transportation.

Investment Information

Oklahoma invested more than \$35 million in homeland security grant funds in equipment for 117 response units and delivered over 1500 training courses to more than 27,000 responders. RRS is funded by the State Homeland Security Grant Program, Urban Areas Security Initiative, Law Enforcement Terrorism Prevention Grant Program, and Metropolitan Medical Response System Grant Program.

Source: FEMA, <http://bit.ly/2fJK0m5>.

Case Study 3

Amateur Radio Volunteers Protect Community Water Supply

Summary

Federal preparedness grants support Colorado's structured partnership with the Amateur Radio Emergency Service (ARES), which assists in establishing and maintaining emergency communications during disasters.

Description

The Division of Homeland Security and Emergency Management coordinates emergency radio communication throughout the State of Colorado. The division serves a population of approximately 5.2 million residents, half of which live in the Denver metropolitan area. Denver is the largest city in a state of 104,100 square miles (8th largest) and a state-wide population density of approximately 50.3 persons per square mile.

Colorado uses Emergency Management Performance Grants to purchase amateur radio equipment for use in Emergency Operation Centers and mobile communications vehicles throughout the state. In partnership with State officials, ARES uses these resources to ensure functioning emergency communications during incident operations.

In 2013, Colorado experienced historic rainfall and flooding. The National Weather Service recorded rainfall amounts exceeding eight inches in the City

of Boulder on Sep. 12th, and amounts exceeding four inches the next day. That same day, the Boulder Creek, which flows roughly eastward through town, crested in downtown Boulder at 7.78 feet—the highest water level observed at that location since 1894. Thousands of residents faced power outages and evacuation orders in the Denver-Boulder area as officials called in the National Guard to assist rescue efforts. Schools, businesses, and government offices closed. Surrounding roads remained closed and impassable leaving several mountain communities isolated.

As part of the response effort, 150 ARES volunteers in Colorado's Northeast Region deployed to assist. When floodwater threatened the electronic controls of a wastewater facility serving a community of 80,000 people, ARES established a microwave SCADA

(Supervisory Control and Data Acquisition) network using two grant-funded repeaters. This enabled ARES to collect data from sensors at the facility and take remote control of the plant. ARES maintained control of the facility for 4 months—preventing any wastewater from spilling into the floodwater.

Investment Information

Since 2005, Colorado has invested over \$33 million in State Homeland Security Program and Emergency Management Performance Grants to establish a statewide interoperable trunked radio system that provides continuous coverage for daily operations and emergencies throughout 95% of the state. This capability is augmented with a \$250,000 investment of Federal and state matching funds into communications equipment caches. The state manages a lending system of 100 grant-purchased radios, 25 satellite phones, and 2 cell-on-wheels. The caches support response efforts throughout the state, including the 2012 and 2013 fires, they also support recovery efforts—as of Apr. 2014, 17 satellite phones maintain communications with the crews rebuilding a highway destroyed by the 2013 floods.

Source: FEMA, <http://bit.ly/2fhPy4p>.

Important Terms

National Planning Frameworks
National Preparedness Goal
Whole Community
Business continuity planning
Continuity of Operations Plan (COOP)
Functional needs
Core capabilities
Drills
Tabletop and functional exercises

Self-Check Questions

1. What kinds of organizations must consider disaster preparedness?
2. What is the difference between mitigation and preparedness?
3. What are the steps involved in the preparedness cycle?
4. According to *Ready.Gov*, what are the three basic steps people can take to prepare for any type of disaster?
5. What are the seven key elements that can be used to measure the comprehensive nature of an evacuation plan?
6. Name five functional needs populations, and describe what makes their disaster planning needs unique.
7. Name the National Planning Frameworks and describe their purpose.
8. Describe the activities associated with the National Preparedness Goal.
9. Why is it important to involve representatives from all stakeholders in the disaster planning process?
10. What kinds of training opportunities are provided by the federal government? What agencies provide these courses, workshops, and other programs?
11. What are the four types of disaster exercises? What does each involve?
12. Name the ways that the National Preparedness Directorate guides national preparedness efforts.

Out-of-Class Exercises

1. Create an individual or family plan using the guidance provided in FEMA's *Are You Ready* publication (<http://bit.ly/2fAHxLw>). Did you find any shortfalls in this program? What did you learn by using the publication?
2. Contact your local office of emergency management and find out if there is an evacuation plan for your local community. What must occur for an evacuation to be ordered? Who has the authority to issue that order?
3. Determine what functional needs populations exist in your community. Select one, and find out whether special preparedness and emergency planning considerations have been made to accommodate their unique needs.
4. Assist a local small business or nonprofit organization in identifying their hazards and mitigating their risks (often called a Business Continuity Plan, or Continuity of Operations Plan). Several resources are available to help you carry out this exercise, including the following:
Ready.Gov Business: <http://bit.ly/2fhQFB3>
Institute for Business and Home Safety "Open for Business" guide:
<http://bit.ly/2fJOkSs>
Volunteer Florida Continuity of Operations Planning Guide:
<http://bit.ly/2fALzn5>

Communications

Abstract

Communications is now universally accepted as a critical function in emergency management and homeland security. The dissemination of timely and accurate information to the general public, elected and community officials, and the media, plays a major role in the effective management of disaster response and recovery activities. Communicating preparedness and mitigation information promotes actions that reduce the risk of future disasters. Communicating policies, goals, and priorities to staff, partners, and participants enhances support and promotes a more efficient disaster management operation. In communicating with the public, establishing a partnership with the media and actively participating in social media are key to implementing a successful strategy.

Keywords

Mission; assumptions; principles; social media; traditional media; communications plan

WHAT YOU WILL LEARN

- The mission and assumptions that serve as the basis of crisis communications
- How reporting the news by traditional media outlets has changed
- The growing role of social media and first informers in crisis communications
- How FEMA is working to operationalize social media in disaster management
- How to build an effective disaster communications strategy
- The role of social media in the response to Hurricane Sandy

Communications is now universally accepted as a critical function in emergency management and homeland security. The dissemination of timely and accurate information to the general public, elected and community officials, and the media, plays a major role in the effective management of disaster response and recovery activities. Communicating preparedness and mitigation information promotes actions that reduce the risk of future disasters. Communicating policies, goals, and priorities to staff, partners, and participants enhances support and promotes a more efficient disaster management operation. In communicating with the public, establishing a partnership with the media and actively participating in social media are key to implementing a successful strategy.

In his 2013 Congressional Testimony, Shayne Adamski, Senior Manager of Digital Engagement, FEMA, stated, "FEMA's success in fulfilling its mission is highly dependent upon our ability to communicate with the individuals, families and communities we serve." (Adamski, 2013) A 2015 report featured on the Science Daily website noted, "Communication is one of the fundamental

tools of emergency management, and it becomes crucial when there are dozens of agencies and organizations responding to a disaster," ([Science Daily, 2015](#)).

In recent years the media world has undergone a very significant transformation with the emergence of social media outlets such as Facebook, Twitter, YouTube, and others. "Social media is now a common tool emergency management and response organizations turn to in order to interact with the public before, during and after a disaster event." ([Stephens, 2015](#))

Information sharing and its corollaries—collaboration and coordination—are key to effective, sustainable, timely, and participatory post-disaster recovery. "Unimpeded communication and the free flow of information are cornerstones of any post-disaster relief framework..." ([Gillmor, 2006](#))

When that coordination doesn't occur it hinders response and recovery efforts. "...[O]ne of the central facts documented in the aftermath of Katrina: the importance of maintaining a timely and accurate flow of information in a disaster zone. When information was neither timely nor accurate, people suffered." ([May, 2006](#))

Communication failures by government responders in Hurricane Katrina were noted in the report prepared by the United States House of Representatives that stated, "The lack of a government public communications strategy and media hype of violence exacerbated public concerns and further delayed relief." The House report also asked, "Why coordination and information sharing between local, state, and federal governments was so dismal... Why situational awareness was so foggy, for so long... Why unsubstantiated rumors and uncritically repeated press reports—at times fueled by top officials—were able to delay, disrupt, and diminish the response." ([Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006](#))

Many of these issues appear to have been addressed since 2005. FEMA, State, and local emergency management agencies and the voluntary agencies across the country have begun to recognize the importance of social media in their disaster communications. FEMA and the American Red Cross have invested heavily in social media and State and local emergency management agencies are starting to catch up. See sidebar highlighting some of Representative Susan Brooks' comments on communications in Hurricane Sandy.

Emergency MGMT 2.0: How #SocialMedia & New Tech are Transforming Preparedness, Response, & Recovery #Disasters #Part2 #Govt/NGOs

Statement of Chairman Susan Brooks (R-IN) Subcommittee on Emergency Preparedness, Response, and Communications, Jul. 9, 2013

There is no doubt that social media and new technologies are playing an increasing role in the way we prepare for, respond to, and recover from disasters. As we have seen through recent events, such as Hurricane Sandy and the Boston bombings, individuals and organizations, more than ever, are

turning to social media and the Internet to obtain public safety information, to connect with friends and family, and to request assistance from emergency response organizations. In fact, in a 2012 survey conducted by the Red Cross, 70% of respondents suggested that emergency response agencies should regularly monitor their social media sites so they can promptly respond to any requests for help. In addition, an Infographic created by the University of San Francisco showed that during a disaster, one out of three citizens expects help to arrive within 60 minutes of posting a request on social media.¹

Social media also enables response organizations to quickly push information to the public; something that has not been possible on such a wide scale until recently. A great example of this was after the Boston bombings when the first official announcement that Dzhokhar Tsarnaev had been captured came not at a traditional press conference, but through a tweet by the Boston Police Department. Also, during the search for the Tsarnaev brothers, individual citizens were able to tweet and post videos, photos, and other information to law enforcement officials, which served as a “force multiplier” and assisted in the hunt.

During my visit to the Red Cross, I learned how they partnered with Dell to develop a Digital Operations Center, which is the first social media monitoring platform dedicated to humanitarian relief.² This center allows the Red Cross to crowdsource information from affected areas during a disaster; spot trends and better anticipate the public’s needs; and connect people with the resources they need, such as food, water, shelter, or even emotional support.

In conjunction with the Digital Operations Center, the Red Cross has also developed a Digital Volunteer Program, which trains digital volunteers from across the country in how to use online applications to respond to questions from the public, distribute critical public safety information, and provide comfort and reassurance during emergencies.

During Hurricane Sandy, the digital volunteers played a critical role in enabling the Red Cross to actively monitor and verify social media posts around the clock and provide information to create situational awareness.

FEMA’s Administrator, Craig Fugate, has been a big supporter of social media as well, and FEMA has been an active user of Facebook and Twitter to communicate with the public. I have also heard that FEMA is engaging with private sector companies, including Google³ and Twitter,⁴ to determine how best to take advantage of open data, social media, and two-way interaction to enhance their emergency management capabilities.

We are also seeing a rise in the use of social media by state and local emergency management organizations. In a recent survey conducted by the National Emergency Management Association and CNA on the use of social media in the emergency management field, the majority of state, county, and local agencies reported using social media in their disaster preparedness and response efforts, but to varying degrees.

I think a good example of the use of social media at the local level is how the cities of Moore and Oklahoma City used their Twitter accounts during the devastating tornadoes last month. Both cities used Twitter to relay real-time

updates on open shelters, road closures, lost and found pets, and personal items. They also actively monitored their accounts and responded to requests for assistance posted by disaster survivors.

While I have highlighted some positive developments in the use of social media and new technology, I do realize that there are some challenges as well. For example, we must be mindful of how misleading, faulty, or malicious information or pictures can escalate quickly on social media sites and potentially negatively affect response efforts. In addition, as we learned from our private sector partners in the last hearing, there is a need to establish common standards and procedures to help make the sharing of data more efficient. Our private sector witnesses also agreed that there could be more done in the way of public/private sector partnerships to help maximize the use of social media for disaster purposes, and to leverage big data so response and recovery efforts can be focused on those areas most in need.

Endnotes

1. University of San Francisco Website. Accessed on June 20, 2013, <http://bit.ly/2foS1KJ>.
2. American Red Cross Website. Accessed on June 20, 2013. <http://rdcrss.org/2fNcAmt>.
3. FEMA Website: Accessed on June 21, 2013, <http://bit.ly/2fNxHC>.
4. FEMA Website. Accessed on June 21, 2013, <http://bit.ly/2fEGgTR>.

Source: Statement of Chairman Susan Brooks (R-IN) Subcommittee on Emergency Preparedness, Response, and Communications, "Emergency MGMT 2.0: How #SocialMedia & New Tech are Transforming Preparedness, Response, & Recovery #Disasters #Part2 #Govt/NGOs", July 9, 2013 Remarks as Prepared. <http://bit.ly/2enwzTO>.

FEMA and other first responders first used social media outlets almost exclusively to get information out to the general public and their partners. In recent years, FEMA and the Department of Homeland Security have sought to make fuller use of the vast amount of information generated by social media users before, during, and after a major event.

A Mar. 2013 article in "Emergency Management" magazine noted, "In the days up to and immediately following Sandy's landfall, FEMA had a team watching the nearly 20 million Twitter messages posted about Sandy to better identify what was happening on the ground and put out timely safety information. On Oct. 29, the day Sandy made landfall, FEMA reached more than 300,000 people on Facebook (up from an average of 12,000 per day), reached 6 million Twitter users with one message (through retweets by individuals and partners), saw 5800 mentions on Twitter per hour (of the term "FEMA") and had more than 500,000 visitors to Ready.gov that day alone." (Cohen, 2013)

This same article noted; "In 2010, the DHS S&T's First Responders Group established a Virtual Social Media Working Group (VSMWG) (<http://bit.ly/2eapmLA>) to address the challenges of using social media in public safety. The mission of the VSMWG—whose membership is drawn from a cross section of subject experts from federal, tribal, territorial, state and local

responders from across the U.S.—is to provide recommendations to the emergency preparedness and response community on the safe, sustainable use of social media technologies before, during and after emergencies.” ([Cohen, 2013](#))

Critical Thinking

Why is it critical that emergency and homeland security officials provide timely and accurate information to the public before, during, and after a natural or manmade disaster or terrorist incident?

This chapter includes sections that define the mission of an effective disaster communications strategy and outlines five critical assumptions that serve as the foundation for such a strategy, chart the rise of social media use in general in this country and specifically in disaster scenarios, examine how FEMA and other first responders are working to take full advantage of social media’s unique capabilities to communicate with the public and to provide critical situational awareness before, during and after a disaster strikes, and guide how to build an effective disaster communications strategy and capability.

Mission

The mission of an effective disaster communications strategy is to provide timely and accurate information to the public in all four phases of emergency management:

- *Mitigation*—to promote implementation of strategies, technologies, and actions that will reduce the loss of lives and property in future disasters
- *Preparedness*—to communicate preparedness messages that educate and encourage the public take action to prepare for future disaster events
- *Response*—to provide to the public notification, warning, evacuation, and situation reports on an ongoing disaster
- *Recovery*—to provide individuals and communities affected by a disaster with information on how to register for and receive disaster relief

Assumptions

The foundation of an effective disaster communications strategy is built on the following five critical assumptions:

- Customer Focus
- Leadership Commitment
- Inclusion of Communications in Planning and Operations
- Situational Awareness
- Media Partnership

Five Critical Assumptions for a Successful Communications Strategy

1. *Customer Focus*—Understand what information your customers and your partners need and build communication mechanisms that deliver this information in a timely and accurate fashion.
2. *Leadership Commitment*—The leader of the emergency operations must be committed to effective communications and must participate fully in the communications process.
3. *Inclusion of Communications in Planning and Operations*—Communications specialists must be involved in all emergency planning and operations to ensure that communicating timely and accurate information is considered when action decisions are being considered.
4. *Situational Awareness*—Effective communication is based on the timely collection, analysis, and dissemination of information from the disaster area in accordance with basic principles of effective communications, such as transparency and truthfulness.
5. *Media Partnership*—Traditional media outlets (i.e., television, radio, Internet, newspapers, etc.) and social media outlets (i.e., Facebook, YouTube, Twitter, and others) are the most effective means for communicating timely and accurate information to the largest number of people. A partnership with the media involves understanding the needs of the media and employing trained staff who work directly with the media to get information to the public. Both traditional media and social media may also serve as information sources for emergency managers especially during the response and recovery phases.

Customer Focus

An essential element of any effective emergency management system is a focus on customers and customer service. This philosophy should guide communications with the public and with all partners in emergency management. A customer service approach includes placing the needs and interests of individuals and communities being served first, being responsive and informative, and managing expectations.

Customer Service and Emergency Management

"We in the emergency management profession are about people and their capability to prepare for, respond to, recover from, and mitigate the damages these types of events produce. Our job, like all in a public service capacity, is one of customer service with our customers at the local level of government."

Albert Ashwood, Chairman, NEMA Legislative Committee Director, Oklahoma Department of Emergency Management.

Source: Ashwood, Albert. 2013. Chairman, NEMA Legislative Committee Director, Oklahoma Department of Emergency Management, Statement for the Record on Behalf of the National Emergency Management Association (NEMA), Submitted to the House Committee on Homeland Security Subcommittee on Emergency Preparedness, Response, and Communications United States House of Representatives, "Emergency MGMT 2.0: How #SocialMedia & New Tech are Transforming Preparedness, Response, & Recovery #Disasters #Part2 #Govt/NGOs," July 9, 2013.

The customers for emergency management are diverse. They include internal customers, such as staff, other federal agencies, states, and other disaster partners. External customers include the general public, elected officials at all levels of government, community and business leaders, and the media. Each of these customers has special needs, and a good communications strategy considers and reflects their requirements.

Leadership Commitment

Good communication starts with a commitment by the leadership of the emergency management organization to sharing and disseminating information both internally and externally. One of the lessons learned from Hurricane Katrina according to a report authored by Donald F. Kettl of the Fels Institute of Government at the University of Pennsylvania in the report entitled *The Worst is Yet to Come: Lessons from September 11 and Hurricane Katrina* is "We need public officials to lead. Communicating confidence to citizens and delivering on promises are both critical in crises." ([Kettl, 2005](#))

The leader of any disaster response and recovery effort must openly endorse and promote open lines of communication among the organization's staff, partners, and public in order to effectively communicate. This leader must model this behavior in order to clearly illustrate that communication is a valued function of the organization.

Examples of leadership commitment to effective disaster communications include the efforts of President Barrack Obama, New York City Mayor Michael Bloomberg, New York State Governor Andrew Cuomo and New Jersey Governor Chris Christie in Hurricane Sandy in 2012. All four public officials were very visible before, during, and after Sandy made landfall, delivering regular updates and briefings for the media and the public. The staffs of all four

officials made extensive use of social media to get information to the public during Sandy.

In addition, FEMA Administrator Craig Fugate was involved in countless briefings, news conferences, and media interviews, getting information to the public through the media concerning how to prepare for, respond to, and recover from Sandy. FEMA and other Federal agencies involved in the Federal response and recovery effort posted blogs on the FEMA website, photos and videos on YouTube, and daily messages on FEMA's Twitter account and Facebook page.

FEMA's Fugate and President Obama have worked closely together since 2009 to communicate both preparedness messages and critical response and recovery messages to the public. The most recent example is the hurricane preparedness message delivered jointly by Fugate and the President in advance of the 2016 hurricane season. (See Hurricane Preparedness sidebar.) In addition, President Obama has made a point of visiting FEMA HQ and meeting with Fugate and the FEMA staff whenever there has been a major declared disaster during his Presidency to help deliver the message that FEMA and the Federal government will be in impacted communities as long as they are needed and to encourage individuals and communities to apply for Federal assistance.

Remarks by the President on Hurricane Preparedness--FEMA National Response Coordination Center

My important responsibility as President of the United States is to keep our people safe. And that's why I just met with key members of my Homeland Security team, including our FEMA Director, Craig Fugate, here at FEMA's National Response Coordination Center. And Craig and his team gave us updates on preparations for the 2016 hurricane season, which starts tomorrow.

All of us have seen the heartbreak, the damage and, in some cases, the loss of life that hurricanes can cause. And as climate continues to change, hurricanes are only going to become more powerful and more devastating. Now, states play the primary role in preparing for and responding to disasters. But our team here works around the clock to make sure that those states and the people living in those states have everything that they need to get the job done.

One of the things that we have learned over the course of the last seven and a half years is that government plays a vital role, but it is every citizen's responsibility to be prepared for a disaster. And that means taking proactive steps, like having an evacuation plan, having a fully stocked disaster supply kit. If your local authorities ask you to evacuate, you have to do it. Don't wait.

And so one of the biggest, most important messages that we're going to be delivering throughout hurricane season is that you cannot judge the dangerousness of a hurricane based on the fact that in the past it dissipated or it missed you. If your local authorities say that you need to start evacuating, you need to start evacuating and get it done. Because, oftentimes, despite the

enormous progress that we've made technologically and in terms of forecasts, the way that urban centers are designed today, even in areas that are not big metropolises, evacuations take time and people have to respond.

And what we've been seeing is some public complacency slipping in; a large portion of people not having preparedness kits, not having evacuation plans. We've been stagnant a little bit with respect to the number of people, the percentage of people who respond to an evacuation order. All that has to pick up, because we want to make sure that, although it's hard to prevent property damage, that we are doing everything we can to prevent loss of life.

If you need information about how to put together an evacuation plan, how to put together a disaster preparedness kit, as Craig said, we've got an app for everything now. We have a FEMA app in English and in Spanish to help you prepare your family for a disaster. You can update the National Weather Service alerts. You can get safety tips for more than 20 kinds of hazards. It provides you directions to nearby shelters.

So I would encourage every American, no matter where you live, to stay vigilant, to check Ready.gov—I will repeat that: that is Ready.gov—check that regularly to make sure your family is prepared for severe weather.

Finally, I just want to thank all the outstanding public servants not only at FEMA, but at NOAA, which does a lot of our forecasting. Our National Hurricane Center—Rick Knabb does a great job. Some of you guys have seen him on TV when things happen. When I came into office, I think FEMA was an organization that was still, as Craig put it, wrapped around the axel. It now exemplifies the extraordinary role that effective government agencies and the people who work there can play in making our lives better, in saving lives, in helping people pick themselves back up after they've gotten hit with a tremendous blow.

So I want to publicly acknowledge not only the outstanding work that Craig has done, the leadership that he's provided here at FEMA, but everybody at FEMA, because they have dealt with everything—hurricanes, storms, tornadoes, flooding, fires. And in every situation, FEMA has been there on time, ready. And I think it's a testament to their effectiveness that very rarely, if ever, have you heard a complaint from a governor or a mayor or a local community about a lack of responsiveness when it comes to FEMA, no matter what the disaster is.

But having said all that, having been really proud of the way that FEMA has operated, and all the agencies involved in disaster preparedness have operated over the last seven years—seven and a half years, what we also know is it only takes one. It just takes one big disaster for us to really see some severe impacts. What we're always worried about are the things we don't know, things we can't anticipate, things that we haven't seen before. And that is why it's so important to make sure that every American, every family participates actively in getting prepared. And if we do that, then we're going to have the kind of resilience that we're all looking for.

So thank you very much for the great work that all of you are doing. And we're going to keep on being forward leaning throughout this hurricane season

to make sure that we're doing everything we can. We can't control the weather, but we can control our responses to it. And you've got a government here who's ready to help.

Source: The White House. 2016. Remarks by the President on Hurricane Preparedness—FEMA National Response Coordination Center. May 31, 2016. <http://bit.ly/2exzVXD>.

Inclusion of Communications in Planning and Operations

The most important part of leadership's commitment to communications is inclusion of communications in all planning and operations. This means that a communications specialist is included in the senior management team of any emergency management organization and operation. It means that communication issues are considered in the decision-making processes and that a communications element is included in all organizational activities, plans, and operations.

In the past, communicating with external audiences, or customers, and in many cases internal customers, was not valued or considered critical to a successful emergency management operation. Technology has changed that equation. In today's world of 24-hour television and radio news, the Internet, and social media, the demand for information is never-ending, especially in an emergency response situation. Emergency managers must be able to communicate critical information in a timely manner to their staff, partners, the public, and traditional and social media outlets.

To do so, the information needs of the various customers and how best to communicate with these customers must be considered at the same time that planning and operational decisions are being made. For example, a decision process on how to remove debris from a disaster area must include discussion of how to communicate information on the debris removal operation to community officials, the public, and the media.

Critical Thinking

Why is the director of an emergency management/homeland security organization so important to a successful crisis communications capability? What is this person's contribution(s) to keeping the public informed?

Situational Awareness

Situational awareness is key to an effective disaster response. Knowing the number of people killed and injured, the level of damage at the disaster site, the condition of homes and community infrastructure, and current response efforts provide decision makers with the situational awareness necessary to identify needs and appropriately apply available resources. The collection, analysis, and dissemination of information from the disaster site are the basis for an effective communications operation in a disaster response. This is also true during the

disaster recovery phase, especially early in the recovery phase when the demand for information from the public, and therefore the media, is at its highest. Developing effective communication strategies to promote community preparedness and/or mitigation programs requires detailed information about the nature of the risks that impact the community and how the planned preparedness programs will help individuals and communities to be ready for the next disaster and the mitigation programs will reduce the impacts of future disasters.

Sharing this information is all-important and this will require creating a culture among emergency officials where information sharing is valued. Past research found that information available to citizens at times of crises—man-made or natural—is often inadequate, biased, incorrect, or late. “Studies show that the problem lies not with the technologies (or lack thereof) but with the culture of information sharing. The access, dissemination, and archiving of information is often controlled by government agencies, institutions who have a parochial interest in controlling its flow—what gets out where, to whom, how, and when.” ([Gillmor, 2006](#))

A glaring lack of situational awareness was identified as a severe hindrance to the government response to Hurricane Katrina. The US Senate report on the Hurricane Katrina response listed the following findings regarding situational awareness:

- The HSOC failed to take timely steps to create a system to identify and acquire all available, relevant information
- The HSOC failed in its responsibility under the NRP [National Response Plan] to provide “general situational awareness” and a “common operational picture,” particularly concerning the failure of the levees, the flooding of New Orleans, and the crowds at the Convention Center
- On the day of landfall (Monday), senior DHS officials received numerous reports that should have led to an understanding of the increasingly dire situation in New Orleans, yet they were not aware of the crisis until Tuesday morning
- Louisiana was not equipped to process the volume of information received by its emergency operations center after landfall
- Lack of situational awareness regarding the status of deliveries created difficulties in managing the provision of needed commodities in Louisiana and Mississippi. ([Senate Committee on Homeland Security and Governmental Affairs, 2006](#))

Critical Thinking

What are the many sources of information that can help emergency managers and homeland security officials build and maintain situational awareness? Consider governmental, nongovernmental, traditional media, and social media sources.

Public Information in the National Incident Management System (NIMS)

"Public Information consists of the processes, procedures, and systems to communicate timely, accurate, and accessible information on the incident's cause, size, and current situation to the public, responders, and additional stakeholders (both directly affected and indirectly affected). Public information must be coordinated and integrated across jurisdictions, agencies, and organizations; among federal, state, tribal, and local governments; and with NGOs and the private sector. Well-developed public information, education strategies, and communications plans help to ensure that lifesaving measures, evacuation routes, threat and alert systems, and other public safety information are coordinated and communicated to numerous audiences in a timely, consistent manner."

Source: FEMA. National Incident Management System. December 2008.

According to the National Incident management System (NIMS) document dated Dec. 2008, "The PIO gathers, verifies, coordinates and disseminates accurate, accessible, and timely information on the incident's cause, size, and current situation; resources committed; and other matters of general interest for both internal and external use." (FEMA, 2008) (See [Fig. 5.1](#))

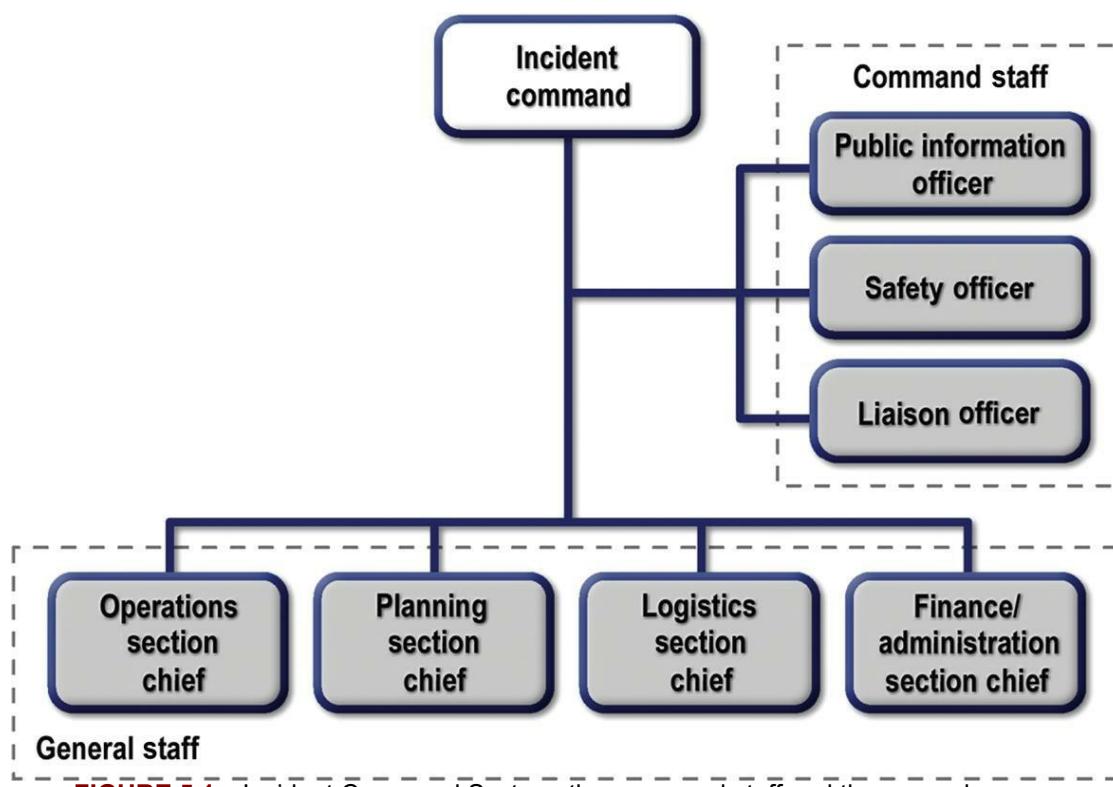


FIGURE 5.1 Incident Command System: the command staff and the general staff. *FEMA. National Incident Management System. December 2008.*

The duties of the PIO are defined as follows:

The Public Information Officer supports the incident command structure as a member of the Command staff. The Public Information Officer advises the IC/UC on all public information matters relating to the management of the incident. The Public Information Officer also handles inquiries from the media, the public, and elected officials; emergency public information and warnings; rumor monitoring and response; media relations; and other functions required to gather, verify, coordinate, and disseminate accurate, accessible, and timely information related to the incident. Information on public health, safety, and protection is of particular importance. Public Information Officers are able to create coordinated and consistent messages by collaborating to:

- Identify key information that needs to be communicated to the public
- Craft messages conveying key information that are clear and easily understood by all, including those with special needs
- Prioritize messages to ensure timely delivery of information without overwhelming the audience
- Verify accuracy of information through appropriate channels
- Disseminate messages using the most effective means available (FEMA, 2008)

During a disaster response, an effective information management system involves three critical elements:

1. **Collection of information at the disaster site**—This effort may involve numerous groups including local first responders (police, fire, and emergency medical technicians), local and state emergency management staff, Federal damage assessment teams, the local Red Cross chapter and other voluntary organizations on the ground, community leaders, and individuals. Increasingly, the public has been using online tools to share directly or through the traditional media information and images from the front lines and information from “First Informers” needs to be acknowledged and included.
2. **Analysis of information**—This effort is undertaken to identify immediate response support needs and early recovery phase needs and is used by decision makers to match available resources to these identified needs.
3. **Dissemination of information**—This involves sharing of this information internally with all stakeholders in a timely fashion and externally with the media and through the media with the public. (FEMA, 2008).

In the Incident Command System (ICS) as defined by FEMA, the Planning Section “is responsible for collecting, evaluating, and disseminating operational information pertaining to the incident. This Section maintains information and intelligence on the current and forecasted situation, as well as the status of resources assigned to the incident. The Planning Section prepares and documents Incident Action Plans and incident maps, and gathers and disseminates information and intelligence critical to the incident. The Planning Section has four primary Units and may also include technical specialists to assist in evaluating the situation and forecasting requirements for additional personnel and equipment.” (FEMA, 2008)

Media Partnership

The media, both traditional media (TV, radio, and print) and social media (Facebook, YouTube, Twitter, etc.), plays a primary role in communicating with the public. No government emergency management organization could ever hope to develop communications networks comparable to those networks already established and maintained by traditional and social media outlets. To effectively provide timely disaster information to the public and to make full use of the information generated both in traditional and social media outlets, emergency managers must establish a partnership with these media outlets.

The emergence of social media in recent years has provided emergency managers with a whole new set of opportunities and partners. Social media allows emergency managers to engage in a conversation with the individuals they serve that is ongoing before, during, and after a disaster event. Social media also presents a new source of real-time data and information from the field to emergency managers. Much of the rest of this chapter discusses how social media has changed disaster communications and its implications for the future of disaster communications.

In a Jun. 7, 2013 post of the Scientific American website entitled “How Social Media Is Changing Disaster Response,” author Dina Fine Maron noted, “When Hurricane Katrina ravaged the U.S. Gulf Coast in 2005, Facebook was the new kid on the block. There was no Twitter for news updates, and the iPhone was not yet on the scene. By the time Hurricane Sandy slammed the eastern seaboard last year (2012), social media had become an integral part of disaster response, filling the void in areas where cellphone service was lost while millions of Americans looked to resources including Twitter and Facebook to keep informed, locate loved ones, notify authorities, and express support. Gone are the days of one-way communication where only official sources provide bulletins on disaster news.” ([Maron, 2013](#))

The goal of a media partnership is to provide accurate and timely information to the public in both disaster and non-disaster situations. The partnership requires a commitment by both the emergency manager and the media to work together, and it requires a level of trust between both parties.

Traditionally, the relationship between emergency managers and the media was strained at best. There was often a conflict between the need of the emergency manager to respond quickly and the need of the media to obtain information on the response so it can report it just as quickly. This conflict sometimes results in inaccurate reporting and tension between the emergency manager and the media. The loser in this conflict is always the public, which relies on the media for its information.

It is important for emergency managers to understand the needs of the media and the value they bring to facilitating response operations. An effective media partnership provides the emergency manager with a communications network to reach the public with vital information. Such a partnership provides the media with access to the disaster site, access to emergency managers and their staff, and access to critical information for the public that informs and ensures

the accuracy of their reporting.

An effective media partnership helps define the roles of the emergency management organizations to manage public expectations and to boost the morale of the relief workers and the disaster victims. All these factors can speed the recovery of a community from a disaster event and promote preparedness and mitigation efforts designed to reduce the loss of life and property from the next disaster event.

Critical Thinking

Why would a traditional media outlet (e.g., television network, radio station, newspaper, magazine) enter into a media partnership with a government emergency management/homeland security agency? Why would a social media outlet (Facebook, YouTube, Twitter, etc.) enter into such a partnership?

The Power and Promise of Social Media in Emergency Management

Congressional Testimony by Shayne Adamski, FEMA' Senior Manager of Digital Engagement.

FEMA's approach to emergency management recognizes that individuals, families, and communities are our greatest assets and the keys to our success. In order to fulfill our mission, we must work together as one team—this notion is at the heart of our whole community approach to emergency management.

Social media is imperative to emergency management because the public uses these communication tools regularly. Rather than trying to convince the public to adjust to the way we at FEMA traditionally communicated, we have adapted to the way the public communicates, leveraging the tools they use on a daily basis. Millions of Americans use social media every day to check in on friends and family, learn about current events, and share their experiences. FEMA uses social media to be part of this ongoing dialogue and meet people where they are, using tools and platforms they are already familiar with.

FEMA also uses social media and other digital methods to communicate because as we have seen, information can lead to action. Our goal is for our safety-related information to have a real-world impact—to inspire actions that lead to more resilient families and communities. If someone sees a preparedness or safety tip from FEMA, the goal is that it will inspire them to prepare or empower them to tell a friend how to be more prepared or where to find help.

Finally, social media and technology allow us to reach more people more quickly during disasters, when they need accurate, timely, and authoritative information that helps ensure the protection of their life or livelihood. With one click of the mouse, or one swipe on their smartphone's screen, a message is capable of being spread to thousands of people and having a tangible impact.

Source: Statement of Shayne Adamski, Senior Manager of Digital Engagement, Federal Emergency Management Agency, U.S. Department Of Homeland Security, Before the Committee on

Finally, it is important to understand that social media is not be all and end all for communicating with the public. FEMA's Senior Manager of Digital Engagement Shayne Adamski noted in a recent interview, "Social media is but one of many tools that we use at FEMA to disseminate preparedness messages to the public before a disaster strikes, and we deliver timely and accurate information to the public in the immediate aftermath of a disaster event and the recovery period that follows." ([Adamski, 2013A](#))

A Nov. 12, 2012 post on the "Mindjet" website by Pete Hunt noted, "Three key media lessons emerged in the storm's wake: (1) Social media is invaluable, but its limitations are significant. Twitter is useless when your phone is out of batteries. (2) Radio and other traditional news outlets still have an important role to play in emergency broadcasting. But their reach is amplified when they embed themselves within the social media environment. (3) During a disaster, the best news is local news. People will track down local information on whatever platform they can find it." ([Brown, 2012](#))

Whether dealing with the media, the public, or partners, effective communication is now accepted as a critical element of emergency management. Media relations should be open and cooperative, the information stream must be managed to provide a consistent, accurate message, and officials need to be proactive about telling their own story before it is done for them. A customer service approach is essential to communicate with the public, a collaborative approach should be taken to promoting programs, and great care should be given as to how and when risk is communicated to citizens. Multiple agencies and unclear lines of responsibility make communications among partners a challenge; political skill and acumen are needed to overcome such hurdles, and efforts are under way to improve communications in this area.

The Changing Media World

The Internet and social media have radically and irreversibly transformed the communications landscape. We are living through a media revolution that rivals the effects of earlier tectonic shifts—the inventions of the printing press, telephone, photograph, radio, and television.

The Internet has created a “new” news landscape and changed forever the way and speed news is produced and consumed. Former New York Times columnist Frank Rich explained, “We didn’t recognize we were up against change as sweeping as the building of the transcontinental railroad or the invention of electricity.” ([Rich, 2013](#))

The old communications paradigm—of professionals broadcasting one message to many—is dead. Now communications is a conversation between the many—we are all news producers and consumers, content creators and curators. (See [Fig. 5.2](#)) And the operating premise in this new media culture is now, according to Mark Glaser, executive editor of PBS MediaShift, “the audience knows more collectively than the reporter alone.” ([Glaser, 2006](#))



FIGURE 5.2 LaPlace, Louisiana, Sep. 7, 2012—Mar Tobiason, Red Cross shelter volunteer, shows a group of children a YouTube video featuring children living in a temporary shelter. The American Red Cross and FEMA are working

with local, state, and other federal agencies to assist residents affected by Hurricane Isaac. Photo by Patsy Lynch/FEMA.

The emergence of Internet-based social media platforms such as Twitter and Facebook as news providers and the fact that four out of five (80%) of Internet users use their Smartphone to access the Internet and 47% use their tablets ([Chaffey, 2016](#)), means people can access, generate, influence, or share news wherever they are, any time of day. “In this new multi-platform media environment,” according to the Pew Research Center for the People and the Press, “people’s relationship to news is becoming portable, personalized, and participatory.” ([Pew, 2010](#))

People’s appetite for news has not dropped, in fact there’s evidence it may have increased. ([Pew, 2010](#)) Most mobile users are not replacing one platform with another. According the Pew Research Center’s Project for Excellence in Journalism, “they are consuming more news than they had in the past.” ([PEW, 2013](#)) It’s that their consumption of news from traditional sources has declined and their reliance on the Internet and social media for news has increased dramatically. A 2016 Pew report, “A recent Pew Research Center survey found that 36% of U.S. adults learned something about the election in the past week from a print newspaper. This was lower than the portion that learned from radio (44%), digital sources (65%) or television sources (78%). We also recently found that the portion of adults who often get news from print newspapers (20%) falls behind those who learned from radio (25%), news websites and apps (28%) and all forms of television. Until a decade ago, however, newspapers outranked radio and the Internet as the public’s main source of news. Overall, however, the (newspaper) industry continues to shrink, with Editor & Publisher’s DataBook listing 126 fewer daily papers in 2014 than in 2004.” ([Barthel, 2016a](#)) In fact, in 2015, newspaper circulation dropped by 7%, the most since 2010. ([Barthel, 2016b](#))

Bottom line, the American news consumer has never had more news and information options. As Slate’s Matthew Yglesias explains, “There’s lots of competition and lots of stuff to read. A traditional newspaper used to compete with a single cross-town rival. *Time* would compete with *Newsweek*. *Time* doesn’t compete with *Newsweek* anymore: Instead it competes with every single English-language website on the planet. It’s tough, but it merely underscores the extent of the enormous advances in productivity that are transforming the industry... Just as a tiny number of farmers now produce an agricultural bounty that would have amazed our ancestors, today’s readers have access to far more high-quality coverage than they have time to read ... the American news consumer has never had it so good.” ([Yglesias, 2013](#))

What Are Social Media Outlets

Social media are internet-based tools, technologies, and applications that enable interactive communications and content exchange between users who move back and forth easily between roles as content creators and consumers.

While many traditional media (such as newspapers and television) remain important disaster communication channels, traditional media primarily facilitate one-way information dissemination. Social media provides the platform for real time two-way dialogue and interaction between organizations, the public, and individuals. (See Fig. 5.3)

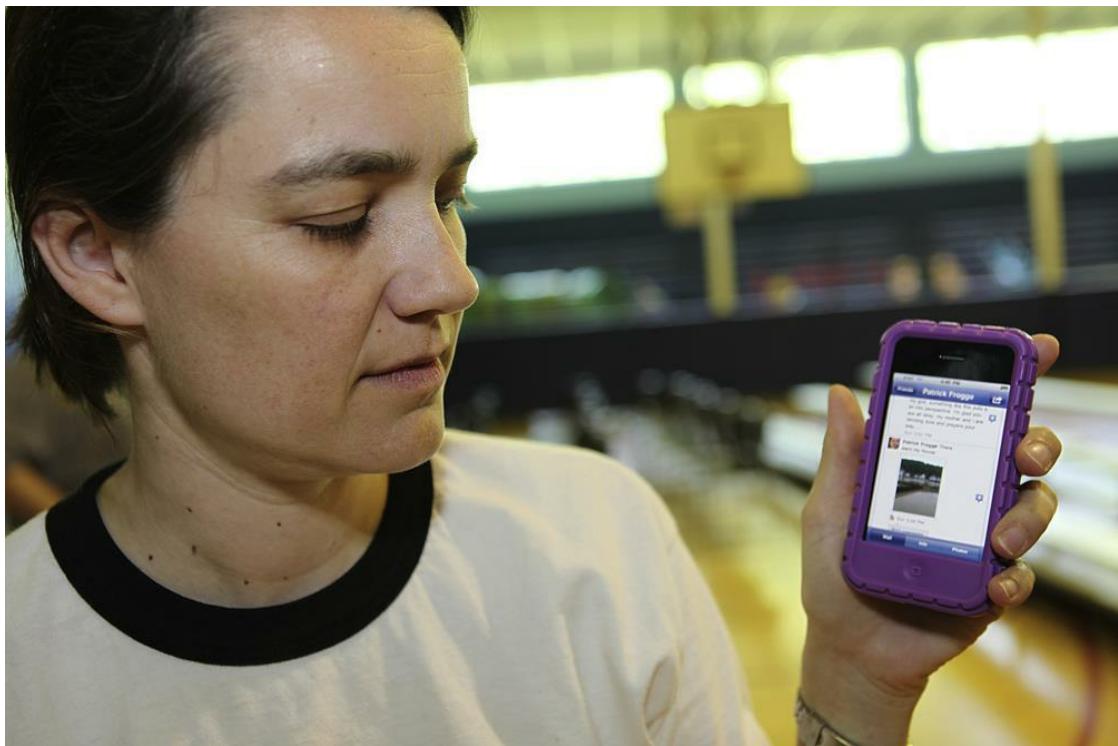


FIGURE 5.3 Nashville, Tennessee, May 5, 2010—Nashville resident and disaster survivor Amy Frogge uses social media to display pictures that document the flood and damage to her home in Davidson County. FEMA responded to the severe storms and flooding that damaged or destroyed thousands of homes in May 2010 across Tennessee. *David Fine/FEMA*.

Social media outlets include, but are not limited to, the following groups:

- **Social networks:** A social network is a website that allows people to connect with friends and family, share photos, videos, music, and other personal information with either a select group of friends or a wider group of people based on shared or common interests. Common social networks include Facebook, MySpace, and LinkedIn.
- **Blogs:** Online journals that provide a platform for individuals and organizations to write and share content where readers can comment on the content as well as share that information with others. Examples include WordPress, Blogger, and TypePad.
- **Microblogs:** Sites that allow people to share limited amounts of information through posts, often with links to additional information. The best example of a microblog is Twitter, which allows sharing of bite-sized (140 character) content. Microblogs play an increasingly important role during breaking news events and disasters. Other examples include Tumblr and Yammer.

- **Crowdsourcing:** Crowdsourcing is making an open call to the public asking for solutions to a problem. These groups are being asked to use the Internet and its vast search and connective capabilities to gather and disseminate data, to help out an overloaded infrastructure that cannot or will not provide services needs in an emergency. Crowdsourcing social media sites have been used successfully in response to emergencies:
 - Managing traffic following natural disasters
 - Tracking food radiation contamination following the 2011 Japanese earthquake and tsunami (Safecast.org)
- **Digital Mapping:** Data from many disasters such as fires, floods, and even disease outbreaks are compiled and turned into real-time, interactive visual images or digital maps. Google Maps and Ushahidi are examples of mapping programs used by the public.
- Podcasts—digital audio or video files that can be downloaded from a website onto a desktop or laptop computer, tablet, or mobile device often used by traditional media outlets to distribute programming directly to audience members and by individuals and organizations distributing information and advocacy materials.
- **Forums:** Online discussion groups focused on particular interests and topics. They have diverse topics of interest available for discussions. They can be powerful and popular elements of online communities during a public health emergency. LiveJournal, ProBoards are good examples.
- **Video Sharing:** Online sites for sharing video—including YouTube and Vimeo.
- **Photo sharing:** Online sites for sharing photos multimedia content. Flickr and Pinterest are prime examples.
- **Wiki:** Web pages where people work together as a community to create and edit content. Wikipedia is an online encyclopedia that allows participants to add content or edit information included in the entries.

An excellent description of many of the current social media outlets active in disaster communications can be found in a Department of Homeland Security (DHS) document entitled, “The VSMWG From Concept to Reality:

Operationalizing Social Media for Preparedness, Response, and Recovery” developed by the DHS Virtual Social Media Working Group and DHS First Responders. This report includes a wealth of information on how emergency managers can “operationalize” social media into all of their communications practices and activities. A fuller discussion of the VSMWG and this document is presented later in this chapter. Pages 18–19 of this document present the description of seven popular social media sites including Facebook, YouTube, Twitter, Reddit, Foursquare, Flickr, and Instagram. (DHS, 2016)

Two social media sites, Facebook and Twitter, dominate the competition in terms of their use as news distributors, especially during disasters.

A 2015 study, “conducted by Pew Research Center in association with the John S. and James L. Knight Foundation, finds that clear majorities of Twitter (63%) and Facebook users (63%) now say each platform serves as a source for news about events and issues outside the realm of friends and family. That

share has increased substantially from 2013, when about half of users (52% of Twitter users, 47% of Facebook users) said they got news from the social platforms.” (Barthel, 2015)

Facebook

Facebook—which now has 1.65 billion monthly active users—is the most used social networking site in the world and the second most accessed site in the United States after Google. Facebook remains the most used social networking platform, with 72% of online adults say that they are Facebook users. ([Duggan, 2015](#))

Facebook allows registered users to create profiles, upload photos and videos, send messages and keep in touch with friends, family, and colleagues. Facebook also dominates the intersection of social media and news according to the Pew Research Center. (Pew, 2012) Users “share” news stories and video through Facebook—with most links to news stories coming from friends and family. Facebook is considered a pathway to news, allowing users to “share” and “like” news stories and pointing users to content on news organizations websites.

Twitter

For many breaking news events, it is now more likely that the first available description will be produced by a connected citizen than by a professional journalist. Twitter users were the first to report the death of the Boston Marathon bombings, Osama bin Laden, the Aurora, Colorado movie theater shooting, Whitney Houston’s death, the Boston Marathon bombing and the Westgate mall terror attack in Nairobi, Kenya in 2013, and other news stories. Think of Twitter as the new newswire.

The percentage of Internet users who are on Twitter has risen from 16% in 2013 to 23% in 2015. ([Duggan, 2015](#)) According to Pew, “The proportion of users who say they follow breaking news on Twitter, for example, is nearly twice as high as those who say they do so on Facebook (59% vs. 31%)—lending support, perhaps, to the view that Twitter’s great strength is providing as-it-happens coverage and commentary on live events.” (Barthel, 2015)

Twitter’s role as a major news and political platform came to fruition during the Arab Spring when pro-democracy protestors relied on tweets to organize. NPR’s Andy Carvin did pioneering work on Twitter, using the flood of tweets from places like Tahrir Square to question, verify, and report news live as it happened.

A Mar. 2016 Pew Research Center report noted, “Twitter averaged 320 million monthly active users (MAUs) in the fourth quarter of 2015, 9.6% more than in the same quarter a year earlier. Nearly two-thirds (63%) of U.S. Twitter users get news via the service.” ([Desilver, 2016](#))

Social Media and Disasters

Social media use rises dramatically during disaster events. According to the START study on "Social Media Use during Disasters," "Research points to the rapt and sustained attention the public may give social media during disasters." (Fraustino, 2012)

- "According to Twitter, people sent more than 20 million tweets about the storm (Hurricane Sandy) from Oct. 27 through Nov. 1. This was more than twice the usage from the two previous days. From the day the storm made landfall on Oct. 29 through Wednesday the 31st, news, information, photos, and video made up more than half of all the Twitter conversation." (PEW, Sandy 2013)
- A 2016 Pew Research Center report noted, "Twitter can be a valuable tool in helping to deal with emergencies. A 2012 Pew Research Center study found that Twitter was a critical lifeline when Hurricane Sandy devastated wide swaths of the East Coast in October of that year. Twitter traffic during Sandy and its aftermath was more than double what it was just before the storm hit; people mainly used Twitter to share news and information as well as photos and videos." ([Desilver, 2016](#))
- Instagram's chief executive officer Kevin Systrom told the Associated Press that about 10 pictures per second were being uploaded to Instagram with the hashtag #sandy. ([Ngak, 2012](#))
- Twitter saw a 500% increase in Tweets from Japan as people reached out to friends, family, and loved ones in the moments after the 3/11 earthquake and tsunami. According to Twitter, "during the initial stages of the Japanese earthquake, the volume of tweets being sent was up to 5000 tweets per second on five different occasions." ([Richardson, 2011](#))
- The Boston Police Department's follower count spiked from 40,000 to more than 300,000 during coverage of the Marathon bombings and ensuring manhunt for the two terrorist suspects. ([Bar-Tur, 2013](#))
- "A quarter of Americans got information about the explosions and the hunt for the (Boston Marathon) bombers on social networking sites such as Facebook and Twitter. Young Americans in particular kept up-to-date through social media. Slightly more than half (56%) of an 18-to-29 year subgroup polled by Pew got bombing-related news through social networking sites." ([Pew Research Center, 2013](#))

A research paper published in Aug. 2015 notes, "In the past six years, social media has been garnering an ever increasing role as a main communication channel in emergency situations. Social media provides opportunities and possibilities to interact and engage with people during emergencies by disseminating relevant information and gathering posted information." ([Science Daily, 2015](#)) The article also notes that, "The public was the first to adopt Social Media (SM) in innovative and new ways for their various needs during emergencies. Four main types of SM users during disasters have been identified: (1) Innovative—users who improve and adjust SM for their special circumstances; (2) Reactive—users who try to respond and assist the afflicted population using SM tools for the first time; (3) Responsive—emergency responders that use SM tools regularly, but step-up and leverage them during

disasters; (4) Proactive—users or emergency organizations that use SM tools to promote preparedness in routine and are able to leverage them during emergencies. ([Science Daily, 2015](#))

News consumers turn to social media during disasters because it provides:

Immediate access. Half of all Americans are now smartphone owners which means they can log onto social media with the tap of a finger. The proliferation of personal computers, laptops, tablets, and mobile phones provide previously unparalleled access to information through social media.

Familiarity in a frightening time. People are more likely to use a particular social media platform if their friends and family frequently use it and/or they trust and ascribe a high level of credibility to a social media platform. People are more likely to use social media if their friends and family are also users. People turn to existing social networks during disasters, including social media networks created before disasters. ([Fraustino, 2012](#))

Real-time information and situational awareness. Social media use rises during disasters as people seek immediate and in-depth information.

Information seeking is a primary driver of social media use during routine times and spikes almost instantaneously during disasters. After the 2011 Japanese tsunami there were more than 5000 tweets per second about the disaster. And social media uniquely provides real-time disaster information. For example, during the 2007 California wildfires, the public turned to social media because they thought journalists and public officials were too slow to provide relevant information about their communities. ([Fraustino, 2012](#))

A way to reach rescuers and ask for help. More disaster victims are turning to social media for help and rescue—especially in events where loss of phone lines and cell towers make it impossible to call 911. Three out of four Americans (76%) expect help in less than 3 hours of posting a request on social media, up from 68% in 2011. ([American Red Cross, 2012](#)) And both the 2011 and 2012 Red Cross surveys confirm that the public overwhelmingly believes government agencies should be monitoring social media for distress calls and responding promptly.

After the 3/11 Japanese tsunami, 59-year old Naoko Utsami found herself on the rooftop of a community center with just one line of communication—the email on her mobile phone. She emailed her husband, who emailed their son in London who sent a Tweet to the deputy director of Tokyo who initiated the air rescue of Utsami and 400 others trapped on the roof. ([Perera, 2013](#))

Personal status information. In a 2012 survey, the American Red Cross found that three out four (76%) say they've contacted friends and family to see if they were safe and let loved ones know they are safe during disasters. ([American Red Cross, 2013](#)) 40% of those surveyed said they would use social tools to tell others they are safe, up from 24% in 2011. ([American Red Cross, 2013](#)) The top term employed by Facebook users in the United States the day after Hurricane Sandy hit was “we are ok.”

A tool for reuniting families and friends. After devastating tornadoes hit Joplin, Missouri, dozens of Facebook pages, including “Joplin Tornado Citizen Checks, helped reunite friends and family and locate the missing.” According

to Time Magazine, these pages “quickly became the fastest way to get information, as survivors and their relatives relied on social media as they might once have leaned on the Red Cross or local relief agencies.” (Skarada, 2011)

After the 2010 Haiti earthquake, Google worked with the United States Department of State to create Google Person Finder, an online registry and message board for survivors, family, and loved ones affected by a natural disaster allowing them to post and search for information about each other's status and whereabouts. Google Person Finder launched in English, French, and Haitian Creole on Jan. 15, less than 3 days after the earthquake. ([Beckerman, 2013](#))

A way to meeting real-time needs. After Hurricane Sandy hit the Northeast in Oct. 2012, in addition to the obvious sources for information about food and shelter like the American Red Cross, FEMA, as well as the Ready.gov site, hashtags like #needgas[zipcode] #chargingstation #warmingshelter were created so the public could directly aid the public. More than a third of the respondents surveyed by the Red Cross say social information has motivated them to gather supplies or seek safe shelter. (American Red Cross, 2012)

Unfiltered information. Social media provides “raw” information unfiltered by traditional media, organizations, or politicians. It also provides authorities the opportunity to bypass the media and communicate directly with the public. One of the Boston police officers responsible for the social media content during the Boston Marathon bombings put it: “We don’t break news. We are the news.” ([Keller, 2013](#))

A way to hold officials accountable. When the Japanese government would not admit the scope of the danger of from leaking radiation at the Fukushima nuclear power plant after the 2011 earthquake, social media and crowd sourced information were used to create an accurate picture of the threat.

A platform for volunteering or donating. During disasters, people use social media to organize emergency relief and ongoing assistance efforts. Both Facebook and Twitter were used for disaster relief fundraising in Haiti. In the first 48 hours following the Haitian Earthquake, the Red Cross raised more than \$3 million dollars from people texting a \$10 donation. ([Beckerman, 2013](#))

A tool for building community and resilience. As the public logs in online to share their feelings and thoughts, they build relationships and create a sense of community even when scattered across a vast geographical area. These virtual communities can be temporary or continue through recovery and beyond.

Emotional support and healing. Disasters are tragedies and they prompt people to seek not only information but also human contact, conversation, and emotional support.

Clearly social media is already intertwined with disaster response communications and information management and is now a critical element in preparedness and recovery communications. And as Americans are becoming increasingly reliant on social media and mobile devices during emergencies, so inescapably are the media and emergency managers.

Critical Thinking

Why is social media well suited for use by emergency and homeland security officials as well as the public? How does the technology meet the information needs of both groups?

The Emergence of Social Media as a Disaster Communications Tool

Even though the 1990s was a time of transformation in communications technology with the emergence of the World Wide Web, 24/7 cable television, and array of digital tools—from affordable and widely available wireless mobile devices and high-resolution satellite maps—digital media was not a factor in natural disaster coverage or recovery until 2001.

In the aftermath of the Sep. 11, 2001 terrorist attacks, citizen-shot videos of the attacks on Twin Towers dominated news coverage and Americans turned to the Internet for information. But the sharp spike in traffic froze and crashed Websites. In many ways, 9/11 was the last disaster covered under the old model of crisis communications: newspapers printed “extra” editions, people turned to television for news and “the familiar anchors of the broadcast networks—Tom Brokaw, Peter Jennings, and Dan Rather—took on their avuncular roles of the past for a nation looking for comfort and reassurance.” ([May, 2006](#))

Television was the dominant source of news: More than half of Americans learned about the terrorist attacks from television; 1 in 4 from another person; 1 in 6 from radio, and only 1% from the Internet. After first learning about the crisis, 4 out of 5 Americans turned to TV to learn more. ([Fraustino, 2012](#))

Every disaster since Sep. 11 has involved more “citizen journalists” and expanded the use and utility of the new media tools and technologies. An analysis of events traces the evolution of best practices and increasing reliance on social media:

China's SARs Epidemic (2003)

In 2003, during China's SARs epidemic, people used text messaging to exchange information the government tried to suppress. ([Hattatuwa, 2007](#))

The Asian Tsunami (2004)

Dan Gillmor author of the seminal book on participatory journalism, *We the Media; Grassroots Journalism By the People, For the People*, called the Dec. 26, 2004 Asian tsunami, “the turning point—a before-and-after moment for citizen journalism.” ([Cooper, 2007](#)) Blogs, Websites, and message boards provided news and aid—and in real time. One blog, “[waveofdestruction.org](#)” logged 682,366 unique visitors in 4 days. ([Cooper, 2007](#)). Photo sharing capabilities and features were used to document events and to provide dramatic visual eyewitness accounts, including a poignant and frightening video of an

incoming wave taken from the abandoned camera of one of the victims. This disaster also saw the initiation of the use of mobile technologies to solicit and receive donations for relief efforts.

The London Transit Bombings (2005)

Mobile devices played key communication roles in disseminating information primarily by text and photo during the terrorist attacks in the London subways. A cellphone photo taken by a commuter in a smoked-clogged tunnel in the Tube became the iconic image of the disaster. Londoners pooled their digital photos on Flickr—a photo-sharing site and service that allows people to tag pictures with comments and labels. Not only did Flickr host all of these images, they made them available for reuse, and bloggers writing about the bombings were able to use the Flickr images almost immediately, creating a kind of symbiotic relationship among social tools. Police asked people to supply them with cellphone pictures or videos because they might contain clues about the terrorists. (Shirky, 2008)

Hurricane Katrina (2005)

In Aug. 2005, Hurricane Katrina, a category three hurricane, tore through New Orleans, LA; Mobile, AL; and Gulfport, MS. Over 1500 people were killed and tens of thousands left homeless. Blogs became the primary information-providing tool used by both traditional media and citizen journalists. Staff reporters for New Orleans' daily newspaper, *The Times-Picayune*, created a blog that for a time became the front page of their news operation. It enabled members of the community isolated by floodwaters and debris to show and tell each other what they were seeing. ([May, 2006](#))

Disaster survivors were also heavy users of location-specific media. For example, 75% of New Orleans residents responding to one survey visited online sites specific to their neighborhoods after Katrina. (Fraustino, 2012) Message boards provided critical information about shelter locations, family tracing, and missing persons. Internet expert Barbara Palser counted 60 separate online bulletin boards that were created to locate missing people within 2 weeks of the storm. ([May, 2006](#)). Google Earth and Google Maps, which provide and use online satellite imagery, were used to illustrate damage assessments—particularly to the Gulf coast and barrier islands. ([May, 2006](#))

California Wildfires (2007)

In Oct. 2007, wildfires in Southern California resulted in the loss of nearly 2200 homes and over \$1 billion in damages. Residents with camera and video capacities on their cellphones were able to report on the fires' paths before first responders reached the disaster site. ([CDC, 2012](#)) The wildfires marked a major step forward in the integration of mainstream media and citizen journalists. "Local media has been highlighting user-submitted photos and videos, and

embedding new technology in their prime coverage. San Diego's public television station, KPBS, used Twitter to give its audience updates when its Website went down, and the Twitter updates now have a prominent place on their homepage." (Glasser, 2007) San Diego TV station News 8 responded to the crisis by taking down its entire regular Website and replacing it with a rolling news blog, linking to YouTube videos of its key reports, plus Google Maps showing the location of the fire. ([Stabe, 2007](#)) The NBC-affiliate in San Diego received over 2000 submissions of pictures and video related to the wildfires. ([Glaser, 2007](#)).

Virginia Tech shootings (2007) and Northern Illinois University (NIU) Shootings (2008)

People used mobile media extensively to communicate with others and give real-time accounts of what was going on during these traumatic events. People used Facebook and other social networking sites to interact with others, seek information regarding the crisis, share experiences, form online relationships with others, and build community and awareness of the tragic events. According to Digital Journalism Professor Sean Mussenden, coverage the Virginia Tech shootings marked the first time traditional media, most particularly The Washington Post, "trolled Facebook and Twitter for information. It really was one of the first major examples of traditional media really relying on social media." ([Mussenden, 2013](#))

Myanmar Cyclone and China's Sichuan Earthquake (2008)

On May 2nd, 2008, Cyclone Nargis struck the Irrawaddy Delta region of Myanmar (Burma). The cyclone, with winds of 120 mph, made landfall at the mouth of the Irrawaddy River—a low-lying, densely-populated region—and pushed a 12-foot wall of water 25 miles inland, killing at least 80,000 people, and leaving as many as 2.5 million homeless. Ten days later, on May 12, 2008, a 7.9 earthquake devastated China's Sichuan province, toppling buildings, collapsing schools, killing more than 69,000, injuring over 367,000, and displacing between 5 and 11 million people.

Two disasters. One common link. They demonstrated that new technologies—the Internet, text messaging systems, camera phones, Google Map mash-ups—and citizen journalists, especially bloggers, had irrevocably altered the nature of disaster reporting and replaced the top-down flow of information from repressive governments and the traditionally rigidly-controlled media in times of crisis with a dynamic and democratic two-way exchange.

In Myanmar, where Internet and cellphone access were limited, the military government refused to allow aid workers or journalists to reach disaster areas and moved fast to restrict communications. In spite of these restrictions, Burmese blogs and news sites were quick to react by posting eyewitness

accounts of the disaster and mobilizing fundraising efforts. ([BBC News, 2008](#)) Twitter emerged quickly as an important medium for coverage of the crisis. Aid agencies working in Burma including AmeriCares and the Salvation Army used Twitter to disseminate information and coordinate activities. YouTube hosted scores of videos recording the devastation and feeble response. ([Rincon, 2008](#)) Global Voices Online and traditional media like *The New York Times*, BBC, and CNN featured, linked to, or aggregated coverage by bloggers and linked to videos and photos recorded by eyewitnesses.

Twitter broke the news of the Sichuan earthquake, according to several news accounts, before the US Geological Survey was able to perform its official role and report it. ([Washkuch, 2008](#))

A fast-moving network of text messages, instant messages, and blogs became a powerful source of firsthand accounts of the earthquake—testament to the fact that in the wake of disaster, the Chinese government gave reporters and bloggers unprecedented freedom. ([Global Voices Online, 2008](#)) In addition to the broad use of Twitter, other online and new media tools included scores of user-shot videos on YouTube that captured the moments the quake struck, bulletin boards to help relatives and friends locate missing people, a channel on QQ Prayer to report fundraising scams and a map mashup on Netease that allowed users in Wenchuan to report in live time what was happening in their area. ([Global Voices Online, 2008](#))

In addition to using online technology to report on the earthquake damage, Chinese citizens also used the same tools to expedite the recovery. According to *The Washington Post*, volunteers used email, text messages, and cellphones to gather information on where help or supplies were needed and to direct relief. “No one from the government told us what to do. In this urgent situation, we decided to share some of the responsibility,” one of the volunteer coordinators told *The Washington Post*. ([Fan, 2008](#))

Mumbai Terrorist Attacks (2008)

On Nov. 27, 2008, a series of coordinated terrorist attacks across the city of Mumbai hit several hotels, a cafe, train station, and a Jewish center killing 173 people and injuring more than 300. Traditional news media took their lead and got most of their information from sources on the ground. The ten gunmen used new media—Google Earth maps—to scout their locations. ([Tinker, 2009](#)) Eyewitnesses reported events during the 60-hour terrorist ordeal using tweets, Flickr pictures, and videos posted on YouTube from their mobile devices. ([Tinker, 2009](#)) That user-generated content became the first reports of the attacks. According to ZDNet author Jennifer Leggio, Mumbai “is where social media grew up.” ([CDC, 2012](#))

Haiti Earthquake (2010)

(A detailed case study on the use of new media during this disaster is presented at the end of this chapter.)

On the 12th Jan. 2010, a 7.0 magnitude earthquake scale struck near Port au Prince in Haiti killing more than 220,000 and displacing 1.7 million. Within minutes, Ushahidi, an organization that uses volunteers to gather data from text messages, emails, and social media—primarily Tweets and Facebook posts from eyewitnesses—began to pinpoint those reports on a Web-based, interactive map. Ushahidi, which is also the name of a crisis-mapping software first developed and used in Kenya, was used to capture, organize, map, and share critical information coming directly from Haitians during the initial disaster response phase.

The Haiti earthquake disaster highlighted the use of text messages and mapping software to communicate and track calls from people needing immediate medical attention or who were trapped under buildings and other fallen structures. “Haiti was a turning point in terms of the emergence of collaborative and distributed organizations and the recognition that social media serves a broader purpose for emergency managers than tweeting about what you are eating for lunch,” explained Dr. Jeannette Sutton, a disaster sociologist who studies the dynamics of online communications via Twitter across hazards and over time. Mobile phones were used to communicate first aid information and to provide information about where to go for shelter, food, water, and other health assistance. ([CDC, 2012](#))

The growing prevalence of mobile phone ownership and use, even in very poor countries like Haiti, made rescue efforts possible that would have been unthinkable in 2000. ([CDC, 2012](#)) Following the earthquake, mobile devices allowed people from all over the world to donate to relief efforts using text messages. This type of fundraising effort, first seen following the 2004 tsunami disaster in Southeast Asia, increased the awareness of the power of nonprofit organizations as a communication channel in a disaster situation. ([CDC, 2012](#))

Japanese Earthquake and Tsunami (2011)

Crowdsourcing websites were used for monitoring traffic patterns out of affected regions and for tracking radiation contamination of food in the affected region and beyond. ([CDC, 2012](#)) Google’s Crisis Response site was one of the most visited social media sites used for sharing information on the crisis. It provided access to the company’s Person Finder search program, which helps people reconnect after a disaster, using both personal descriptions and photos. They could connect with missing persons phone lines and emergency voicemail message boards. They could also receive alerts and statuses from world health agencies, Japanese utility companies, government agencies services, and real-time updates of RSS feeds. ([CDC, 2012](#))

Tuscaloosa and Joplin Tornados (2011)

2011 was the deadliest US tornado year on record, with more than 1,665 tornados striking across the United States. Tuscaloosa, AL and Joplin, MO were especially hard hit. Social media were the public’s first source of disaster

information. For example, Twitter played a key role generating the first photos of the Tuscaloosa tornado devastation. (Fraustino, 2012) The public also used social media to help find loved ones. A Facebook page named “Joplin, Mo. Tornado Recovery” gained 123,000 members in the days after the tornado and was used to help locate family members. (Fraustino, 2012) Social media also helped in the recovery and rebuilding. People monitored social media for volunteer opportunities. For example, the first Sunday after the storm in Tuscaloosa one school system posted a request for volunteers to help clean up schools, and within 30 minutes almost 80 people showed up. Similarly, on Craigslist the “Joplin Tornado Volunteers List” aggregated volunteer opportunities. And in Tuscaloosa, the city created a social media website, Tuscaloosa Forward, for residents to share ideas for rebuilding; in less than 6 weeks, more than 4000 visitors provided more than 300 ideas. (Fraustino, 2012)

Hurricane Sandy (2012)

(A detailed case study on the use of new media during this disaster is presented at the end of this chapter.)

From Oct. 29 to 30, 2012 a category one hurricane swept across the US East Coast causing eight states to declare states of emergency and resulting in up to \$50 billion in damage. Social media was widely used for information sharing: 1.1 million people mentioning the word “hurricane” on Twitter within a 21-hour time period. Sandy became the number two most talked about topic on Facebook during 2012. For the first time the photo-sharing site Instagram played a major role in information sharing during a disaster with ten storm-related pictures per second posted on the site. (Fraustino, 2012)

Sandy also marked a shift in the use of social media by government agencies – an acknowledgment and embrace of social media’s critical role in disasters in disseminating information, connecting people, and controlling rumors. In Sandy, more than ever before, government agencies turned to mobile and online technologies to communicate with the public and response partners:

- The New York Office of Emergency Management and New Jersey Governor Chris Christie used Twitter and Facebook were used to relay evacuation orders, direct resources where they were needed, provide victims with updates about aid, shelter and storm conditions ([Cohen, 2013](#))
- On Oct. 29, the day Sandy made landfall, FEMA reached more than 300,000 people on Facebook (up from an average of 12,000 per day) and reached 6 million Twitter users with one message ([Cohen, 2013](#))
- Even before Sandy, New York City had 3 million followers across more than 300 city accounts on Facebook, Twitter (in both English and Spanish), Google+, Tumblr, YouTube, and more. Throughout response and recovery, these channels made it easy for the city to share information in various formats, and enabled people to find and consume information in ways they preferred and were used to ([Cohen, 2013](#))
- The public could also sign up to receive text alerts from the Mayor’s Office Twitter account, @nycmayorsoffice, which served as a great alternative digital

resource to the city's website, once people lost power and Internet access ([Cohen, 2013](#))

Boston Marathon Bombings (2013)

At 2:49 PM on Apr. 15, 2013 two bombs exploded near the finish line of the annual Boston Marathon killing three people and injuring 264. The first reports about the terrorist attack were spread through Twitter and Facebook. Even though television was the most widely-used source of information about the bombing and its aftermath, it was social media that shaped the story and the response. While 80% of Americans followed the story on TV according to the Pew Research Center, about half (49%) say they kept up with news and information online or on a mobile device and a quarter of Americans got information about the explosions and the hunt for the bombers on social networking sites such as Facebook and Twitter. Young Americans in particular kept up-to-date through social media. Slightly more than half (56%) of an 18-to-29 year subgroup polled by Pew got bombing-related news through social networking sites. ([Pew Research Center, 2013](#))

The Boston Marathon bombings were a watershed, a moment that marked forever the changed role of social media and the fully participatory public in breaking news events and coverage. The New York Times wrote: "It is America's first fully interactive national tragedy of the social media age. The Boston Marathon bombings quickly turned into an Internet mystery that sent a horde of amateur sleuths surging onto the Web in a search for clues to the suspects' identity..." ([Katutani, 2013](#))

The two suspects in the Boston Marathon bombing were identified, cornered and captured through the grand scale dissemination and collection of information, photos, and videos through social media. Twitter, Facebook, and Internet websites all are credited with the effort. ([Presuitti, 2013](#)) In the end, it was the public's connections to each other and to technology that broke the case.

The photos released by the FBI of Suspect 1 and Suspect 2, as they were known at the time, were instantaneously tweeted and re-tweeted, Facebookeed, and Facebook-shared. "Thousands of marathon spectators flipped through their cellphone photos and videos—to see if they could match the suspects later identified as brothers Dzhokhar and Tamerlan Tsarnaev," according to the Voice of America News. ([Presuitti, 2013](#))

And finally, it was during the bombings the Boston Police Department set a new standard for government communications during a disaster—using social media to inform, correct inaccurate information, to lead and listen to the public conversation. During the event, the Boston Police Department's Twitter feed increased from about 35 thousand followers to near a quarter of a million ([Glennon, 2013](#)) Mashable—an online media company that focuses on innovation and technology—declared that during the crisis, the Boston Police department "schooled us all on social media," ([Bar-Tur, 2013](#)) and asserted that "BPD's presence online helps reinvent the whole notion of community policing

for the 21st century." ([Bar-Tur, 2013](#))

According to 2013 Scientific American article, "Following the Boston Marathon bombings, one quarter of Americans reportedly looked to Facebook, Twitter and other social networking sites for information, according to The Pew Research Center. The sites also formed a key part of the information cycle: when the Boston Police Department posted its final "CAPTURED!!!" tweet of the manhunt, more than 140,000 people retweeted it. Community members via a simple Google document offered strangers lodging, food, or a hot shower when roads and hotels were closed. Google also adapted its Person Finder from previous use with natural disasters." ([Maron, 2013](#))

Nepal Earthquake (2015)

On Apr. 25, 2015, a 7.8-magnitude earthquake struck Nepal killing over 8,000 people and injuring 21,000 more. A feature of Facebook called "Safety Check" was used by Facebook users to check on the status of friends and relatives living in Nepal as described in a Jun. 2015 article in Emergency Magazine excerpts of which are reprinted in the accompanying sidebar. ([Gosnell, 2015](#))

Facebook's Safety Check Feature

Within a few hours of the devastating 7.8-magnitude earthquake hitting Nepal last Saturday, Facebook stepped in to help.

Users around the world with Facebook friends in the affected region started getting notifications that their friend was "marked safe."

Later that afternoon, Facebook CEO Mark Zuckerberg explained why in a post on his timeline.

"When disasters happen, people need to know their loved ones are safe," he wrote. "It's moments like this that being able to connect really matters."

The feature is called "Safety Check," and it locates Facebook users in the region of a disaster site either by through the city listed on a user's profile or from where they last used the Internet.

Users receive a notification asking if they are safe. If they click the green "safe" button, a notification is generated to their friends.

Launched in Oct. 2014, the idea stemmed from the 2011 earthquake and tsunami in Japan, when people around the world began to see how social media and technology worked to help those affected stay connected. ([Gosnell, 2015](#))

Source: Gosnell, Angela. 2015. Social Media's Role in Disaster Response Expands. Emergency Management. May 5, 2015. <http://bit.ly/2f3xoFb>.

Critical Thinking

What do the previous case studies have in common in terms of crisis communications? Are there any significant differences between each of these events in terms of the information collection and dissemination needs of government officials and the public?

The Use of Digital Media During Disasters Will Continue to Skyrocket

What has driven the expanded use of and reliance on social media in disasters to date is the dramatic increase in the number of users and the explosion of tools at their disposal. The proliferation of mobile devices and connectivity—64% of Americans own a Smartphone with access to the Internet ([Smith, 2015](#)); 84% of adults in the United States are now on the Internet ([Perrin, 2016](#)) and 65% of online adults are using social networking sites ([Perrin, 2015](#))—has helped fuel the continued growth of social media.

The number of social media networks has exploded, and countless sites are adding social features, or integrations. And the number of app downloads from the Apple App store and the Google Play store for Android in is staggering. “Since Apple officially opened the App Store, in 2008, its pool of titles has grown to eight hundred and fifty thousand, and more than fifty billion apps have been downloaded for use on iOS devices ... With Apple now at over fifty billion app downloads, and Google’s Android apps having been downloaded nearly as many times, the two companies can count a hundred billion app installations between them.” ([Guerriero, 2013](#))

That trend is also playing out in the world of emergency management. According to the Center for Technology Innovation at Brookings, “In response to natural disasters such as Hurricane Katrina (2005), the earthquake in Haiti (2010), the earthquake and tsunami in Japan (2011), and the Oklahoma tornados (2013), mobile invention and application have skyrocketed. Mobile development has surged in reaction to the increase in need for instant and accurate information.” ([West, 2013](#))

The report cites a range of innovations including the creation of *Aerial 3D* by Japanese developers which uses laser beams to provide emergency response information to people in need of help and allows them to use mobile devices to pinpoint their locations and AT&T’s *InstantAct*, “an application that provides public safety officials with an exact field location during disaster and a more robust, dependable way of communicating via voice.” ([West, 2013](#))

After the Japanese tsunami, Apple featured a new section in its App Store called “Stay in Touch,” providing a number of disaster relief applications such as: The American Heart Associations’ *Pocket First Aid & CPR; Disaster Alert*, which provides information on instant global “active hazards;” and the American Red Cross’s *Shelter View*, which helps users locate a nearby shelter. A number of government agencies including HHS, FEMA, and the USGS among others offer disaster relief apps. ([West, 2013](#))

This profusion of new mobile tools should make accessing information before, during, and after disasters easier and indicates the reliance on digital and social media will continue its dramatic growth and evolution.

Building an Effective Disaster Communications Capability in a Changing Media World

Just as the media world is changing dramatically, the world of emergency management is changing rapidly. The onslaught of major catastrophic disasters around the world and the projected impact of global climate change have forced the emergency management community to reexamine all of its processes, including communications. Managing information before, during, and after a disaster has changed significantly in recent years and emergency operations at all levels—local, state, and national—must recognize and acknowledge this change and adapt accordingly.

An article posted on The Guardian website entitled, “Social media’s crucial role in disaster relief efforts” noted, “Cities all over the world are at risk from extreme weather conditions and other infrastructure crises. That’s one reason why, in recent years, a number of companies like Philips, Siemens and Ideo along with NGOs and groups like the C40 Cities have created dedicated research projects aimed at using big data and collaborative techniques (including crowdsourcing) to plan the future of sustainable cities. In one UN-funded project, researchers in Bangkok used a crowdsourcing mobile app to get local people to conduct real time flood monitoring.” ([Yeomans, 2012](#))

A Jun. 4, 2015 entry on the “idisaster 2.0” blog stated that, “Social media is now a common tool emergency management and response organizations turn to in order to interact with the public before, during and after a disaster event.” ([Stephens, 2015](#))

As we have noted throughout this chapter, the biggest change in disaster communications has come with the emergence of the public’s use of social media outlets as partners in disaster coverage and communications. No organization working in the emergency management field—government, nongovernmental groups, voluntary agencies, private sectors—can ignore the role that the public and their information networks will play in future disasters. On the contrary, it is incumbent on emergency management organizations to embrace digital and social media much the way traditional media outlets (i.e., television, radio, newspapers) have already done and much to their benefit.

Emergency management organizations such as FEMA have established partnerships with both the traditional media outlets and social media in order to meet their primary communications mission of providing the public with timely and accurate information before, during, and after a disaster.

Social Media & Emergency Management #SMEM with Craig Fugate

(Presented below are excerpts from a video produced by FEMA featuring FEMA Administrator Craig Fugate discussing the use of social media in disasters. A full transcript of the video and a link to actual video can be found at <http://bit.ly/2fqNVjx>.)

Question: How can social media help emergency managers?

Fugate: Well you know when we first started getting involved in social media there was things like Myspace, and then you had Facebook and then Twitter came along, micro-blogging and blogs were starting to get real popular and Twitter was essentially a micro blog. And what was interesting was, it was a—for many emergency managers—another way to get out another press

release, to get out information.

But what was a little bit different about social media versus the traditional ways of getting information out, people started replying to you. And this was really I think the change of what started to happen was an understanding that social media wasn't just about broadcasting information out to people, it was about you were actually getting information from them. And you start having two-way conversations and so I looked at social media very early on as how do you communicate with the public during a disaster?

And normally all we could do was talk at them. Now we can actually hear from them. And in many cases they were at the disaster, they were—they oftentimes had better information about what was going on in their neighborhood than you were getting from the overall report, so suddenly we started realizing, hey wait a minute, this isn't just about more press releases in a different format, this is about communication two-way with people who are oftentimes in the area of impact who can tell us what's really going on from their perspective, but at the same time we can now use that with other information and start formulating a response based upon not just our planning assumptions, but real intel coming from the area.

Question: What are the major differences you've seen on social media between 2010 and today?

Fugate: Video and imagery. We were starting to see, early on, people were starting to use various social media feeds to upload imagery and videos. But with some of the newer pieces you can actually go live from a disaster area and become your own reporter using tools like Periscope. So as we go through the proliferation of all of the changes, the one thing that is constant, there are always new tools and new techniques to use social media.

And I think this is the challenge for emergency managers, because whenever we design a course for using social media in emergency management, when that course is ready to go there's already been changes in how people are using it, and I think, this is from the standpoint of emergency managers, we have to understand: social media, through all of its platforms, gives us the ability to have two-way conversations. Both to talk to but listen to what the public is telling us.

The most important lesson we need to understand, however, is we must be willing and able to communicate on the tools the public is currently using, not what we're only prepared to use.

Question: How can the general public use social media during a disaster?

Fugate: So we tell families, one of the first things you do in your planning is build a family communications plan. And part of this is the ability to use social media to communicate with family members, particularly when you can get through on data but you may not be able to make a phone call. In fact, we actually ask people, use data versus calling unless it's an emergency and you're calling 911 because data takes less bandwidth in a crisis.

Question: How do you think people will be using social media in 5–10 years?

Fugate: I have no idea. I mean, that's one of the challenges that I think

emergency managers always face is we don't do a good job of predicting the future when it comes to how the public's using social media. We're literally following. And so I think that's the other part of this is, remember I said early on, we must adapt and make sure that we're providing information how people are consuming it day to day. Social media's always changing.

When I got into the business we were literally using fax machines and tone-alert pagers with voice recorded messages. And it wasn't that many years ago. So as we watch this evolution, emergency management is not so much about we build the technologies is we adapt the technologies to the very basic things we do, which is to inform the public about the risk they face, give them authoritative information during a crisis how best protect themselves and their families. And social media adds one cool dynamic we've never had before.

We're not having to wait until people are dialing 911 to get information. We can now start getting information from disaster sites from the public telling us. But if we don't build those relationships ahead of time, the public won't tell us what's going on, we'll miss the information, and we may be slow to that response. Again, social media isn't a band-aid. It's a tool though that can speed up and better coordinate our actions in a disaster by having better information of which we're making decisions on how we're going to respond to that crisis.

The purpose of this section is to detail the seven elements that we believe will comprise an effective disaster communications capability in the future. These seven elements include:

- A communication plan
- Information coming in
- Information going out
- Messengers
- Staffing
- Training and exercises
- Monitor, update, and adapt

A Communication Plan

Disaster communication plans can take several forms. Planning for communicating in disaster response focuses on collecting, analyzing, and disseminating timely and accurate information to the public.

A disaster response communication plan should include protocols for:

- Collecting information from a variety of sources including citizen journalists and social media
- Analyzing this data in order to identify resource needs to match available resources to these needs. Disseminating information concerning current conditions and actions to the public through both traditional and social media outlets
- Identifying trusted messengers who will deliver disaster response information to the public
- Identifying how disaster communications will be delivered to functional needs and non-English-speaking populations

A disaster response communications plan should include a roster of local, state, and national media outlets, reporters, and first informers. This roster will be contacted to solicit information and to disseminate information back out to the public. Finally, the plan should include protocols for monitoring the media, identifying new sources of information collection or dissemination, and evaluating the effectiveness of the disaster communications. This information would be used to update the plan.

A communications plan for the recovery phase should look very similar to the disaster response plan. The recovery phase communications plan must also include protocols for collecting, analyzing, and disseminating timely and accurate information. During the recovery phase, much of the information to be disseminated to the public will come from government and other relief agencies and focus on available resources to help individuals and communities to rebuild. The communications plan must place a premium on delivering this information to the targeted audiences and must identify the appropriate communications mechanisms to communicate these messages. Information collection from the field from a wide variety of sources must be a priority in the communications plan for the recovery phase. Community relations staff, community leaders, and digital and social media, are good sources of information on the progress of recovery activities and can provide valuable perspective on the mood of the individuals and communities impacted by the disaster. These sources are also effective in identifying communities, groups, and individuals who may have been passed over by recovery programs.

Communication plans for hazard mitigation and preparedness programs can be very similar and include the basics of a good communications plan including:

- Goal—what do you hope to accomplish? Preparedness campaigns seek to help individuals and communities to be ready for the next disaster while the goal of most hazard mitigation programs is to promote community actions to

reduce the impacts of future disasters as was the case in Napa, CA with the community's Flood Reduction Program.

- Objectives—how will you achieve your goal? A common objective for a preparedness campaign is to help families to create a family disaster plan. A hazard mitigation program may seek the support of the voters to pass a bond issue such as the bond issues passed by voters in the City of Berkeley, CA to retrofit critical buildings and infrastructure to resist earthquakes.
- Audiences—to whom will your communications plan be speaking? Target audiences for both preparedness and hazard mitigation communications campaigns may include residents in specific geographic locations, groups of individuals, such as homeowners, small business people, or families, functional needs populations such as children, elderly, disabled, and hearing impaired, low-to-moderate income groups and neighborhoods, and individuals who own pets.
- Tools—what communications mechanisms will be used to communicate with the targeted audience(s)? These mechanisms should include working with traditional media outlets (television, radio, newspapers), digital and social media outlets (Internet, Facebook, Twitter, YouTube, bloggers, and bulletin boards), and neighborhood communications networks.
- Messengers—who will deliver the messages? Potential messengers include elected and appointed officials, trusted community leaders, and, as is the case in communicating with children, animated characters.
- Timetable—the length of the communications program. Plot the various tasks to be undertaken to successfully implement the plan over a timeframe including days, months, and years.
- Evaluate—how well did the communications plan work? Develop means for evaluating the effectiveness of the communications campaign. Success could be measured in terms of raising awareness, prompting action, or securing the votes needed to pass a bond issue.

In all four phases of emergency management, it is important to have a comprehensive communications plan.

Steps That Should be Taken In Preparation For And in Response To A Crisis

1. Establish, communicate, and enforce a customized Social Media Policy that specifies what employees are permitted and not permitted to do concerning social media.
2. Determine what engaging stakeholders via social media should accomplish.
3. Continuously monitor Internet and especially social media content using free online tools such as Google alert, socialmention.com, touchgraph.com, and Twitter alert.
4. Engage a broad range of stakeholders by way of peer-to-peer conversation using various social media tools.
5. Carefully listen to and act upon stakeholder feedback provided via social media.

6. Identify and connect with key online influencers so they distribute your carefully crafted stakeholder messages.
7. Rebut false claims and accusations appearing in social media.
8. Refrain from engaging in pointless debate with negative posters (social media trolls).
9. Link up your organization's website and social media tools.
10. Evaluate your crisis response and make necessary.

Source: Disaster Resources Guide. 2012. Q&A on Social Media and Crisis Management. An Interview With Oliver S. Schmidt. June, 2012. <http://bit.ly/2exzyfS>.

Information Coming In

Information sharing is the basis of effective disaster communications. In disaster response, receiving and processing regular information concerning conditions at a disaster site and what is being done by agencies responding to the disaster allows disaster communicators to provide timely and accurate information to the public. In collecting this information, no potential source should be ignored and all possible sources should be encouraged to forward relevant information. To be successful in this task, you should identify all potential sources of information and develop working relationships with these various sources before the next disaster strikes. You must also be prepared to identify and partner with new sources of information as they come on the scene in the aftermath of a disaster.

Potential disaster information sources include:

- Government damage assessment teams—government disaster agencies at every level have staff responsible for assessing damages in the aftermath of a disaster. For a major disaster, a damage assessment team may include representatives from local, state, and federal response agencies. The information collected will include deaths; injuries; damages to homes, infrastructure, and the environment; and other critical data.
- First responders—among the first on the scene at any disaster, equipped with the necessary communications devices and trained to be observant.
- Voluntary agencies—these groups often have members or volunteers located in the disaster areas trained in damage assessment who can make first and ongoing assessments. For example, the Red Cross has extensive experience in reporting damage to homes and the number of people evacuated and in shelters.
- Community leaders—trusted leaders who have their own neighborhood network or work with community-based organizations with networks into the community can be a valuable source of on-the-ground information.
- First informers—individuals in the disaster site with the wherewithal to collect information and images and to communicate information and images by cellphones, hand held devices, or laptops.
- Social media—Blogs (Web logs), Google Earth, Google Map, Wikis (Wikipedia), SMS (text messaging postings), Twitter, Flickr, Picasa (photo survey sites), and YouTube (video sharing sites).
- Online news sites—aggregate of community news, information, and opinion (ibrattleboro).
- Traditional media—television, radio, and newspaper reporters, editors, and news producers can be good sources of information, especially if they have deployed news crews to the disaster area before or just after a disaster strikes.

Having identified the potential information sources in your area, you must reach out to these sources to develop a working partnership and to put in place whatever protocols and technologies are needed to accept information from these sources. It is important that all potential sources of information

understand what types of information you need from any situation so that they are looking for the information you need to make decisions. Government response agencies and voluntary agencies practicing National Information Management System (NIMS) and Incident Command System (ICS) will know what information to collect. You must reach out to the nongovernmental, nontraditional information sources before the next disaster to let them know what information you need and how to communicate that information to you.

Ideas for developing these working partnerships with nongovernmental, nontraditional information sources include:

- Build neighborhood communications networks—partner with community-based organizations, churches, and neighborhood associations to build neighborhood communications networks. Local residents can be trained in information collection, maybe as part of community emergency response team (CERT) training, and local community leaders can be entrusted to collect this information and forward it to emergency officials. These networks could also be used to send messages from emergency officials to neighborhood residents through trusted community leaders.
- Create and distribute a disaster information protocol for the public—list what information you will be seeking over the course of a disaster response and get this list out to the public. Make sure they know where to email or post the information and images they collect.
- Establish a point of contact within your organization for information sources—designate staff that are accessible and will work with information sources during a disaster.
- Create an electronic portal for information from the field—wikis and Web logs (blogs) can accept and aggregate comments from users, set up a Twitter site that can be updated via text messages, and establish a YouTube and Facebook account.
- Include the public and traditional and social media outlets in disaster response training and exercises—incorporate these information sources into your disaster exercises to identify issues and gaps and to update plans accordingly. Media are not always included in exercises, and nor is the public, but by including these groups in your exercises you make the exercise more authentic, you create an opportunity to identify difficult issues prior to facing them in the next disasters, and you can make appropriate adjustments. It is also a chance to get to know each other.
- Meet with traditional and new media types on a regular basis—another way to create personal relationships with these critical partners in any disaster response.
- Include information sources in your after-action debrief—their perspectives and experiences can be used to update the plan and operations.

Many of these information sources can be identified as part of hazard mitigation and preparedness campaigns. Working relationships can be developed during these non-disaster periods that will facilitate information collection and flow in disaster response.

Information Going Out

If information coming in is the basis for disaster communications, then information going out is the goal. Timely and accurate information can save lives in disaster response and in hazard mitigation and preparedness programs.

Historically, traditional media monopolized the dissemination of disaster information from public sources. Social media must now be added to the information dissemination mix. The Miami Herald reported in May 2012 that Florida Power & Light has “a Twitter account, Facebook posts, YouTube, a blog and also a new Power Tracker system for customers to monitor, in real time, power outages and restoration efforts.” ([Cohen, 2012](#))

In getting information to the public, you must use all the available communications mechanisms including:

- Traditional media—television, radio, and newspapers
- Digital and social media—post new information on community Websites, blogs, wikis, and bulletin boards, Facebook and Twitter; share timely photos and video online on YouTube and tell traditional media that online outlets are being updated routinely
- Neighborhood communications networks—trusted community leaders who go door-to-door

Historically, emergency officials have disseminated disaster information to the traditional media by means of press conferences, briefings, tours of the disaster site, one-on-one interviews with disaster officials, press releases, situation reports, and postings on the Internet. Radio actualities, photographs, and videotape have also been provided to traditional media. In major disasters, emergency management agencies have used satellite uplinks and video and audio press conferences to reach traditional media outlets across large sections of the country.

Disseminating information through social media outlets is growing and is certainly the wave of the future. Still, social media is something new for many emergency officials and will require patience and understanding of how these new media function with their audiences. Most of this work can occur during non-disaster periods. This is the time to learn more about Wikipedia, Twitter, blogs, Flickr, Facebook, YouTube, and social networking sites, and to discover how you as an emergency manager can best use these new media to deliver preparedness and hazard mitigation messages as well as communicate with their target audiences in the disaster response and recovery phases.

Prior to the next disaster you should:

- **Create a Twitter account**—This is an excellent platform for getting concise messages to the public. Pre-disaster is the time to establish a Twitter account and recruit followers. More and more emergency agencies use Twitter to communicate with their customers and to access information from local sources including FEMA, the Red Cross and numerous State and local agencies.
- **Create a Facebook page**—Post information on how to prepare for future

disasters and take mitigation actions that will reduce future disaster impacts. FEMA, other Federal agencies and many State and local emergency management agencies already have established a Facebook page.

- **Start a blog**—get your message out there about the risks your community faces; how to take action to reduce those risks and protect your family, home, and business; how to prepare for the next disaster; when to evacuate and how; what will happen when your organization responds; and how members of your community can become first informers. (See Eric Holdeman's "Another Voice" for comments on blogging.)

Another Voice: Eric Holdeman

Eric Holdeman, former director of the King County (WA) Office of Emergency Management, is the Principal for Eric Holdeman and Associates.

Blogging

We are living in the information age. The rise of computers and the Internet has provided the opportunity to now share information and knowledge like never before. Only the invention of the Gutenberg's printing press rivals the information availability explosion that we are currently living in.

The culture of professional emergency managers is to share information with other emergency managers and other professions. Emergency management crosses the entire spectrum of interests in communities. The private sector, public sector, and nonprofit sectors are all areas of interest to an emergency manager preparing a community for the next disaster.

With this in mind, it was only natural to begin blogging on the topic of emergency management and homeland security. In essence blogging was one of the first "social media" tools available for people to share information and their personal thoughts and opinions. For me, it all started innocently enough by establishing e-mail lists for the various disciplines. When I'd come across information that would be of interest I'd share that with the appropriate spectrum of people and organizations that I had on my e-mail list. There were some days when I was sending ten or more e-mails a day. Maintaining a viable e-mail list in our mobile society was also a time-consuming proposition. One of my staff who was administering our King County Office of Emergency Management (OEM) Website suggested establishing an "Eric's Corner" Web link on our King County Website and then inviting people to sign up to get weekly updates "pushed" out to them. Without knowing it I had "backed into" the world of blogging. Besides sharing facts and documents, I was also providing a bit of commentary if I had an opinion on the information being shared.

Putting the mechanics of a blog in place was not that difficult, but establishing a listserv to push updates out proved more challenging. I found that King County did not have the capacity to do another listserv and I was stymied for a period of time. Then through casual conversations with staff from other organizations, one of them, the City of Seattle's Information

Technology (IT) Office, offered to host the listserv that pushed the blog updates out—and for no charge, where in my own jurisdiction I would have had to pay for the service. This is a great example of the level of cooperation and options that come with establishing regional approaches for any number of new initiatives, if those regional enterprises are to thrive.

After leaving King County I was able to establish a new blog, “Disaster-Zone” (www.disaster-zone.com) that is hosted on Emergency Management Magazine’s website. Not every blogger will have that level of support and ability to tap into a broader audience, but it was my history and frequency of blogging and commitment posting to the blog that garnered me that opportunity. Technology has also advanced so that people who want to be notified of updates as they occur can sign up for Really Simple Syndication (RSS) which is a blogging tool available to people who desire the updated blog postings as they happen. [Note: you will need to verify that the figure mentioned here is still appropriate]

As I write this there is a huge transformation of the emergency management workforce that is occurring throughout the United States. Many senior emergency managers are retiring after 20–30 years of professional service. They are being replaced with a new cadre of Generation X and Y people who many times have more professional education in emergency management, but do not have the practical experience that comes with having served in a position for many years and responded repeatedly to emergencies and disasters. This institutional and tribal knowledge, along with well-established personal and organizational relationships, is quickly disappearing without a transfer occurring to the new generation of leaders in emergency management.

Information is power. Some people choose to hoard it in order to maintain control over what gets done or doesn’t get done. The opposite of that thinking, which I follow, is that if I share what I know with others, I empower them to become better informed and therefore more effective in how they prepare their organizations, communities, and regions. Sharing information in effect gives immortality to the person who is willing to share what they know. And, what you know should not die with you. It would be such a waste of a precious resource, years, sometimes decades, of experience and wisdom that comes from hundreds or thousands of mistakes that you learned from.

People, when they have information, are empowered to make better decisions that may in some cases impact tens of thousands of people during disasters. I have found that blogging is a form of “mentoring” that allows a person transfer information and to coach others in a profession that is still finding its way. I encourage everyone to share what you know by individual mentoring, using social media or other electronic tools like blogging. Reap the rewards of knowing that together we are a stronger profession, and one that is known for collaboration.

- **Post videos on YouTube**—include features such as “How To” videos on how to disaster-proof your home, office, and business. Post videos that explain how to survive the next disaster (how much water and food to have on hand,

where to go for information). Since Sandy, FEMA continues to regularly post videos on YouTube.

- **Create a Google Map**—of the locations of designated shelters and evacuation routes.
- **Create a Cross Agency Team**—to coordinate social media protocols and processes for agreeing on a common Twitter hashtag, agreeing to retweet each other's tweets, etc.

Crowdsourcing Disasters and Social Engagement Multiplied

Thursday, Aug. 8, 2013

(The following article was originally posted by Shayne Adamski, senior manager of Digital Engagement at the Federal Emergency Management Agency (FEMA), to the FEMA blog on Aug. 2, 2013.)

Crowdsourcing disasters. New social media sites. Centralized places to get info. Our digital team at FEMA has been busy launching a number of new tools to help the public and our partners to prepare for, respond to, and recover from disasters. Here's a quick rundown of the new resources:

1. FEMA App with the Disaster Reporter feature
2. FEMA's Social Hub
3. FEMA LinkedIn
4. US Fire Administration Facebook

How does this help you be a part of the emergency management team?

Watch this demo [the news release on the DHS website includes a demo] from Administrator Fugate as he walks through all the new tools and resources you can take advantage of.

Before a disaster, you can download the FEMA App and use the interactive emergency kit checklist and learn what to do during specific hazards. And if you find yourself in a situation, where you need a refresher, you can still pull up the safety info in the app, even if you don't have a cellular or Wi-Fi connection.

After a disaster, if you're not placing yourself in harm's way, you can use the Disaster Reporter feature in the FEMA App and take a photo of the disaster area and upload it to us (just make sure the GPS function is turned on). This includes all types of disasters, not just Federal disasters.

We'll review the photo submissions to ensure: (1) it is disaster-related, (2) not spam, and (3) there are no privacy issues. And then all approved content is posted on a public map. It's pretty simple.

We're really excited about this new feature, because it gives all stakeholders in a disaster area the ability to upload information to a centralized place, allowing all emergency managers to view the information. Since we're using the FEMA GeoPlatform for our mapping interface the content can be shared on other maps and sites, using what techies refer to as an API (Application Programming Interface).

Speaking of centralized places to view information, the Social Hub is where

all stakeholders can go to view tweets from trusted emergency managers. The great thing about the Social Hub is we can change the information we're displaying on the fly. When we launched the Social Hub on Monday, Jul. 29, we were displaying tweets from accounts in Hawaii, because we were monitoring Tropical Storm Flossie.

When the storm dissipated, we transitioned to displaying local National Weather Service tweets, both in a scrolling format and on a map. As we know, more and more people are going mobile with their devices (phones and tablets), so we also created a Social Hub on our mobile site.

Finally, we recently launched two new channels to better engage FEMA's digital audience: the FEMA LinkedIn page and the US Fire Administration Facebook page. On LinkedIn, look for job listings, stories about what a "day in the life" looks like at FEMA, and other training resources. And if you "Like" the US Fire Administration Facebook page, you'll receive lots of stories, resources, and tips for assisting fire departments or firefighters.

When I testified on Capitol Hill on Social Media and Emergency Management last month, I said that we're always looking at how we can expand our existing digital and social products. As you can imagine, we're excited about these new tools and we're looking forward to feedback.

Kick the tires, as they say, and let us know what you think.

Source: FEMA. 2013. Crowdsourcing Disasters and Social Engagement Multiplied. FEMA Blog.
<http://bit.ly/2eIL2ui>.

More and more emergency managers are using data generated by social media users to help gain more comprehensive situational awareness before, during and after a disaster event. A report developed by Penn State researchers and published in Jan. 2016 entitled, "Mining social media can help improve disaster response efforts", highlighted efforts to leverage social media generated data to identify impacted areas from the 2013 Colorado floods. ([Science Daily, 2016](#)) A summary of this report published on the Science Daily website is presented in the accompanying sidebar.

Mining social media can help improve disaster response efforts.

Leveraging publicly available social media posts could help disaster response agencies quickly identify impacted areas in need of assistance, according to a Penn State-led team of researchers. By analyzing the Sep. 2013 Colorado floods, researchers showed that a combination of remote sensing, Twitter, and Flickr data could be used to identify flooded areas.

"FEMA (the Federal Emergency Management Agency), the Red Cross and other response agencies use social media now to disseminate relevant information to the general public," said Guido Cervone, associate professor of geography and associate director of the Penn State's Institute for CyberScience. "We have seen here that there is potential to use social media data from community members to help identify hotspots in need of aid, especially when it is paired with remote sensing imagery of the area."

Because the flooding occurred in an urban setting, the researchers were able

to access more than 150,000 tweets from people affected by the flooding. Using a tool called CarbonScanner, they identified clusters of posts suggesting possible locations of damage. Then, they analyzed more than 22,000 photos from the area obtained through satellites, Twitter, Flickr, the Civil Air Patrol, unmanned aerial vehicles and other sources.

Responders need information in real-time during disasters, so the researchers developed an innovative approach to collect and analyze images from numerous sources in near real-time. They developed a machine-learning algorithm to automatically analyze several thousand images, which allowed them to quickly identify individual pixels of images that contained water.

"We looked at a set of images and manually selected areas that we knew had water and areas that had no water," said Sava. "Then, we fed that information to the algorithm we had developed, and it allowed the computer to 'learn' what was and wasn't water."

The team's findings, published in the current issue of the *International Journal of Remote Sensing*, confirmed that Twitter data could serve to identify hotspots for which satellite imagery should be acquired.

The team also found that satellite imagery on its own was not always reliable, and that social media can be fused with remote sensing imagery to help identify the extent of the flooding.

Source: Science Daily, 2016. Mining social media can help improve disaster response efforts. January 20, 2016. <http://bit.ly/2exyoAI>.

Messengers

The person who delivers the messages plays a critical role in disaster communications. The messengers put a human face on disaster response and these people are critical to building confidence in the public that people will be helped and their community will recover. Public Information Officers (PIOs) regularly deliver information and messages to the media and the public. However, the primary face of the disaster response should be an elected or appointed official (i.e., mayor, governor, county administrator, city manager) or the director of the emergency management agency or both. These individuals bring a measure of authority to their role as messenger and, in the case of the emergency management director, someone who is in charge of response and recovery operations.

The public wants to hear from an authority figure and the media wants to know that the person they are talking to is the one making the decisions. Elected officials who served as successful messengers in recent disasters include Boston Mayor Thomas Menino and Massachusetts Governor Deval Patrick in the aftermath of the 2013 Boston Marathon bombings, President Obama, New Jersey Governor Chris Christie and New York Governor Andrew Cuomo and NYC Mayor Bloomberg in Hurricane Sandy in 2012.

Prior to the next disaster, each emergency management agency should determine if an elected or appointed official will serve as the primary messenger alone or in tandem with the emergency agency director. It is best to work out in advance what types of information will be delivered by which messenger. Protocols for briefing books and situational updates should be developed. A determination should be made as to who will lead press briefings and news conferences, who will be available to the media for one-on-one interviews and who will be involved in communicating with the new media outlets. Again, all of these activities can be shared by the elected/appointed official and the emergency agency director.

Emergency management agencies should also designate appropriate senior managers who will be made available to both the traditional and new media to provide specific information on their activities and perspective. This is helpful in even the smallest disaster when persons with expertise in specific facets of the response can be very helpful in delivering disaster response information and messages.

Involving the designated elected/appointed officials and the agency director in hazard mitigation and preparedness communications will help them to prepare for communicating in disaster response and recovery and will make them familiar with the public as disaster communications messengers.

Staffing

Not many emergency management agencies have a single communications specialist, much less a communications staff. Federal agencies such as FEMA, Department of Homeland Security (DHS), Health and Human Services (HHS), and others involved in disaster have extensive communications staff. Most state emergency management operations have at least a communications director/public information officer. The depth of staff support for communications varies widely. Emergency management agencies in major cities in the United States often have communications directors and in some cases extensive communications staff. Small to midsize cities and communities are unlikely to have a communications director or staff.

Albert Ashwood, Oklahoma State Emergency Management Director, testified before Congress in Jul. 2013 that, “Social media once again played an integral role in disaster communications following the tornadoes, flooding, and severe weather that occurred between May 18 and Jun. 2 in Oklahoma. Due to limited staffing in the OEM, the use of social media was not active during the initial twenty days after the first tornado. Rotating shifts were constructed by public information officers (PIO) to assist along with other agencies in answering media calls during call-heavy time periods. An inadequate number of personnel made it difficult to consistently provide Twitter or Facebook updates.”

([Ashwood, 2013](#))

The survey of emergency management organizations conducted by the CNA for the National Emergency Management Association noted, “Less than one in six agencies surveyed that use social media have dedicated social media personnel.” ([Su, 2012](#))

Critical Thinking

Do you think that homeland security/emergency management agencies, especially at the local level, will have the human resources to build and maintain an effective crisis communications capability?

Implementing Social Media in Emergency Management

Often, an argument from emergency managers is that it will take a lot of staff time and effort to implement a successful social media program. However, with the advent of multiple free services, emergency managers can quickly disseminate, monitor, and archive information via social media. Additionally, as social media continue to mature, there will potentially be a reduced reliance on traditional public information and use of press releases, freeing up time for public information officers and joint information centers to devote to social media.

If emergency managers embrace the use of social media prior to a disaster, their use will become second nature, making the task of employing “new” communication options less daunting during an emergency. It also allows officials to become the authority during disasters and a source of information for their community. A simple plan for the use of social media along with constant use will make their integration into the public information arena and EOC seamless.

One obstacle that many emergency managers often cite is the inability to gain access to these systems due to local informational technology restrictions. It is important to gain the support of the local elected official or decision maker of the community. By explaining to them the importance of these tools in disaster response and highlighting how they can help citizens, there are often ways to get access to social media. In general, having a good plan and protocol for social media use, identify how social media sites will be used and why it will be advantageous to make exceptions in their computer use policies or website restrictions, will help break down the technology restriction barrier.

Finally, even if emergency managers do not use social media, the community will continue to use them. Therefore, it benefits officials to embrace these platforms. By addressing false rumors and information as well as using social media to quickly disseminate important facts, social media can ultimately help emergency managers and organizations respond to critical requests. Social media and associated technology are the current situational awareness platform for many citizens and are changing the field of emergency management. Emergency managers and responders should embrace this movement and use it as another tool in their toolbox.

As more and more people gain access to mobile technology, social network usage will continue to rise. The use of mobile technology and social networks will make it easier for citizens to update emergency and disaster event information through posts, videos and pictures. It will be important for emergency managers to track and data mine social media for emergency preparedness and response. Establishing and implementing social media strategies and processes prior to an emergency event are key factors in increasing the validity and effectiveness of using social media for crisis communication.

Source: Smith, Amanda, Bill Halstead, Lauren Esposito and Jeffrey Schlegelmilch. 2013. Social Media and Virtual Platforms: The New Situational Awareness for Emergency Management Professionals. Center for Emergency Preparedness and Disaster Response, Yale New Haven Health. New Haven.

The time has come for all organizations involved in emergency management to establish an ongoing communications staff capability. For agencies in small-to mid-sized communities this may require enlisting help from the local government’s communications staff. One way to do this is to provide funding for a percentage of this individual’s time each month. In this way communications activities required during non-disaster periods could be acquired on a consistent basis. This will also allow for the local government communications staff and director to become better informed of the emergency

management agency's activities and be better prepared to work with the emergency agency director during disaster response and recovery.

For large cities and federal and voluntary agencies with existing communications staff it is now a matter of reordering priorities to meet the demands of working with the new media. Staff will be required to establish and maintain working relationships with new media outlets and to interact with various blogs, bulletin boards, social networking sites, and other new media outlets that serve their community. At minimum, there should be one designated staff person on the communications staff who is responsible for the day-to-day interaction with social media. Additional staff should be made available in a major disaster to work with these groups.

The social media designated staff would also work with social media outlets in promoting hazard mitigation and preparedness campaigns in the community and serve as the staff support for the establishment and maintenance of neighborhood communications networks working with trusted leaders in the community.

Social Media in Emergency Management: The Digital Public Information Officer

Author: Christopher Poirier

The #SMEM (Social Media in Emergency Management) community is constantly abuzz on the values and challenges surrounding the use of social media by organizations to pass important emergency related information during a disaster. For the sake of this discussion, let us focus on the role of the PIO in keeping people informed through social media.

The PIO's primary job is to act as the "official voice" of an organization. In this case, we will assume the PIO to be a part of a governmental function. This person and his or her team should be the official source of information during an emergency. However, in today's technology-laden landscape, the PIOs in many jurisdictions have either entirely ignored the social media space, misused it, or are just starting to grasp it. To this end, I encourage PIOs to consider the following:

1. *Be the Official Source*
2. *Open the Two-Way Street*
3. *Be Honest*
4. *Recruit, Standardize, and Innovate*

Source: aNewDomain.net. Accessed October 2016. <http://bit.ly/2exFsgL>.

Training and Exercises

An effective disaster communications operation requires well-trained messengers and staff and should be a vital part of all disaster exercises. Elected/appointed officials, agency directors, and PIOs should all receive formal media training in order to become comfortable working with the media to communicate disaster messages to the public. Media training teaches how to communicate a message effectively, techniques for fielding difficult questions, and provides the opportunity to practice delivery outside the crucible of a crisis. If possible, media training should be provided to senior staff who may appear in the media.

Staff training should come in several forms including:

- Media Relations—learning how to work with traditional and new media including meeting deadlines, responding to inquiries, scheduling interviews, and understanding what types of information each media outlet requires and how a news operation works.
- Social Media—learn what a blog is, how social networking works, and how to establish and maintain a neighborhood communications network.
- Marketing—learn how to pitch a story idea for a preparedness program or hazard mitigation project to all forms of media, how to develop supporting materials for preparedness and hazard mitigation campaigns, and how to evaluate the effectiveness of such efforts.

Exercises are an excellent opportunity to test your agency's social media capabilities and learn from your mistakes. This learning process can pay dividends when the next disaster event occurs as it did, "Last November the emergency management team in Nashua, N.H., participated in a cross-border disaster preparedness exercise with Canadian agencies to evaluate how digital volunteers and social media can be incorporated in the official emergency response to address alerts, warnings and notifications as well as mutual aid." A short time later, over Thanksgiving weekend, a powerful nor'easter hit New Hampshire, causing multiple accidents and power outages. "We ended up using skills learned during the exercise right away," said Justin Kates, Nashua's director of emergency management. "Through social media posts, our digital volunteers were tracking roads that were closed and compiling that info onto GIS maps to help first responders direct resources, clear trees from roads and restore power." ([Raths, 2015](#)) See accompanying sidebar that describes efforts to include social media in exercises sponsored by the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP).

The following has been excerpted from a Jul. 2015 article on the GovTech Social website entitled, "First Responders Experiment with Social Media in Disaster Response."

Kevin Breaux, assistant deputy director for preparedness, response and interoperability in the Louisiana Governor's Office of Homeland Security and

Emergency Preparedness, calls the nine regional coordinators across the state his eyes and ears. "If I incorporate social media, I've just multiplied my force by 100. That's the direction we need to go."

Breaux said the state has discussed incorporating VOSTs into its annual hurricane exercise. The exercise could help show senior executives that social media is going to be something the state can depend on, in addition to the information and capabilities it already has. "We also would like to send out specific questions through our public information office about what people are seeing and collect the responses in Google Docs," he said. "Then during a real event, if we have 100 people on social media saying there is a flooded mall and they are sending photos, we can send a confirmation team to act on that."

Social media can play a critical role in showing citizens that the state is incorporating what they are doing in its decision-making processes, and that it understands they are a vital resource, Breaux said.

Source: Raths, David. 2015. First Responders Experiment with Social Media in Disaster Response. GovTech Social. July 23. <http://bit.ly/2f3ybWI>.

One of the most successful exercise series to include the general public through social media is the Great California Shakeout that was initiated in 2008 and now includes Shakeout exercises in communities across the globe. Through the use of various social media networks, participation in these annual exercises has grown from 5.4 million Californians in 2008 to over 28 million participants worldwide in 2014. More information about the Shakeout, as it is now known, exercises can be obtained at its website at <http://bit.ly/2fmc0f4>. ([Shakeout, 2016](#))

Communications operations must always be included in future disaster exercises. It is highly recommended that these exercises include reporters from traditional media outlets and representatives from social media outlets, including bloggers and online news sites. Working with new media and online news sites should be included in exercises such as updating and correcting a Wikipedia site and posting information on a community bulletin board. Community leaders involved in neighborhood communications networks should also be included in the exercise.

Monitoring, Updating, and Adapting

Staff should be assigned to regularly monitor all media outlets. Summaries of news stories in the traditional media should be compiled regularly. Staff should routinely monitor new media outlets and provide regular summaries of news on these sites. This activity is especially important during a disaster response. Through monitoring, the media staff is capable of identifying problems and issues early in the process and can shape communications strategies to address these issues before they become big problems. This is also an opportunity to identify trends in how information flows through the media to the public and to identify areas for improvement of message development and delivery. Regular monitoring will identify rumors and misinformation and speed corrections.

FEMA's Hurricane Sandy: Rumor Control Initiative

From Congressional testimony by FEMA's Senior Manager of Digital Engagement Shayne Adamski

This two-way flow of information had an impact after Hurricane Sandy. In the days following the hurricane, FEMA launched "Rumor Control," an initiative using all of our online platforms to dispel inaccurate information being shared online. We listened and identified rumors circulating online, from logistics information to specific disaster assistance programs, and moved to quickly correct the misinformation. This was done by creating a Rumor Control page on fema.gov and m.fema.gov (FEMA's mobile website), as well as through answering many questions received through our Facebook and Twitter accounts. FEMA receives questions almost daily on Facebook and Twitter, so we dedicate resources to answering them, thus helping to fulfill FEMA's mission of supporting America's citizens.

For more information see Hurricane Sandy: Rumor Control at <http://bit.ly/2fqQzFR>.

Source: Adamski, Shayne. 2013. Comments of the Senior Manager of Digital Engagement, Federal Emergency Management Agency, U.S. Department of Homeland Security, Before the Committee on Homeland Security Subcommittee on Emergency Preparedness, Response and Communications, U.S. House of Representatives, Washington, DC, July 9. <http://bit.ly/2faGgGI>.

FEMA established a webpage "Texas Flooding: Rumor Control" on Jun. 9, 2015 that stated, "Misinformation is circulating on social networks regarding the response and recovery effort for the Texas floods. Rumors spread fast: please **tell a friend, share this page and help us provide accurate information** about the types of assistance available. Check here often for an ongoing list of rumors and their true or false status." (FEMA, 2016) The webpage provided detailed information about FEMA response and recovery activities and programs including: FEMA Registration, FEMA Disaster Assistance, Disaster Assistance For Noncitizens, Renters, US Small Business Administration (SBA);

FEMA Inspectors and Debris Removal.

The information collected as part of monitoring activities can be used to update communications plans, strategies, and tactics. This data can be used to determine how to allocate staff resources and to update training and exercise programs.

New media will continue to emerge as new technologies are developed and become widely accepted. Emergency management agencies must be constantly on the lookout for emerging communications technologies and opportunities. Agencies must adapt to changing media constantly and strive not to become fixed to any one media.

The use of mobile devices to disseminate and collect disaster information is growing that “more than 3 out of 4 crisis communications professionals view the ability to manage incident/emergency communications using mobile devices as a requirement … [the] challenge is to build a communications plan that includes the ability to gather intelligence and communicate with key stakeholders using social media and mobile technologies.” ([Everbridge, 2013](#))

In 2010, DHS established the Virtual Social Media Working Group (VSMWG). According to FEMA/DHS, “The mission of the VSMWG is to provide guidance to the emergency preparedness and response community on the safe and sustainable use of social media technologies before, during, and after emergencies.” ([DHSa, 2016](#))

According to DHS, the VSMWG has produced seven documents since 2010 “ranging from an introduction to social media’s benefits for public safety to how agencies can leverage social media for situational awareness.” ([DHSa, 2016](#)) Brief descriptions of these seven documents are presented in the “VSMWG Documents” sidebar.

VSMWG Documents

A list of published Virtual Social Media Working Group (VSMWG) documents.

The **Virtual Social Media Working Group (VSMWG) Fact Sheet** is an overview of the goals, objectives and work of the VSMWG.

The **Lessons Learned: Social Media and Hurricane Sandy – Jun. 2013** provides an overview on how social media was used in preparation for, in response to, and in recovery from Hurricane Sandy (“Sandy”) in late Oct. 2012. It also discusses processes identified by the first responder community as best practices; presents examples, themes in applications, and lessons learned; identifies gaps in technology, process, and/or policy; and offers points requiring further discussion.

The **Using Social Media for Enhanced Situational Awareness and Decision Support** discusses examples of how agencies currently leverage social media to enhance situational awareness and support operational decision-making, as well as challenges and potential applications.

The **VSMWG Next Steps: Social Media for Emergency Response** serves as a follow-up and supporting document to the Virtual Social Media Working Group’s (VSMWG) Social Media Strategy. It provides considerations and

detailed next steps for public safety agencies developing and implementing social media.

The **VSMWG Social Media Strategy** provides a high-level introduction to social media and its benefits for public safety, examples and best practices from agencies already using social media, and serves as a starting point for developing an agency's detailed social media strategy.

The **Community Engagement and Social Media Best Practices** discusses best practices for the use of social media by public safety agencies of all disciplines and partner organizations for meaningful and successful engagement of community members and stakeholders.

The **VSMWG From Concept to Reality: Operationalizing Social Media for Preparedness, Response and Recovery** provides an overview of how the role of social media in operations and decision-making continues to evolve as it is increasingly used for communications in preparedness, response and recovery.
Source: DHS. <http://bit.ly/2flzsXm>.

In Apr. 2016, DHS published its most recent VSMWG document entitled, "From Concept to Reality: Operationalizing Social Media for Preparedness, Response and Recovery." This VSMWG document provides guidance on how emergency managers can take the lessons learned and included in past VSMWG documents to incorporate information generated by social media into their preparedness, response and recovery practices. (DHSb, 2016) (See excerpts from this document in accompanying sidebar.)

From Concept to Reality: Operationalizing Social Media for Preparedness, Response and Recovery

Excerpts for the Apr. 2016 Department of Homeland Security (DHS) report prepared by the Virtual Social Media Working Group (VSMWG) and DHS First Responders Group:

Executive Summary

"The role of social media in operations and decision-making continues to evolve as it is increasingly used for communications in preparedness, response and recovery.¹ Although government agencies commonly use social media to push information to the public, there is hesitation to use information from the public for operational decision-making due to concerns relating to verification, privacy and liability.² While accurate information is critical for decision-making, the inability to verify the trustworthiness of sources makes decision makers reluctant to trust social media sources. Despite this challenge, information gleaned from social media has proven to be useful and support for its use will continue to expand once integrated into an agency's operational workflow in a robust and complete manner."

"To truly integrate social media into all aspects of public safety, from

preparedness to response and recovery, it must be included in the following: planning and strategy development; operational and procedural documentation; legal, security, privacy, and other related policies; education, training, hiring, and exercises; evaluation and assessment; standards development; private sector collaboration and technology development; and funding strategy (both short- and long-term). Additionally, public safety agencies, especially those with legacy technology investments and long-term purchasing strategies, must consider long-term adoption and continued use of social media. This includes the need for maintaining flexibility to adapt as technology advances and internet trends change.”

1. Past VSMWG reports provide several examples of how social media has been increasingly used for a variety of communications-driven activities, including stakeholder engagement, education, media relations, and messaging.
2. APCO, *Apco ANS 1.112.1-2014, Best Practices for the Use of Social Media in Public Safety Communications*. 2014. <http://bit.ly/2exAxww>.

Purpose

“This report follows the VSMWG’s last publication, *Leveraging Social Media for Enhanced Situational Awareness and Decision Support*, which introduced and discussed how social media can be used for situational awareness in public safety, including:

- An analysis of current social media use as applied to situational awareness in public safety;
- Challenges associated with the use of social media for situational awareness and the perceived barriers to adoption;
- The potential for integration of social media within the operational environment; and
- Areas requiring further consideration, research and development, including the operationalization of social media within all aspects of the disaster life cycle.

‘The purpose of this document is to:

- Serve as follow up to the VSMWG’s previous work focusing on how and why social media should be used in public safety, and the importance of operationalizing and institutionalizing its use;
- Address the need for integration of social media into all aspects of preparedness, response and recovery, to ensure its longevity; and
- Discuss social media’s role in decision-making and information sharing in emergency response, how to operationalize social media in emergency response and for what purposes, and its associated challenges and barriers.”

Social Media and the Joint Information Center (JIC)

“The effort within the JIC should be scaled appropriately to the complexity of the incident to ensure sufficient resources for social media mission requirements of the organization. For example, personnel resources within the JIC may be used to craft outgoing messages for approval and dissemination by the PIO, or may be leading research and collaborating on data collection and

analysis. Social media data may be extracted by proficient users and data analysts in real time; enhanced by the use of a variety of search tools and technologies.

‘Additionally, depending upon the type of information collected, data may be routed and processed for a variety of actions, including:

- Routing to dispatch;
- Responding with official information;
- Routing to situational status unit for dissemination to personnel;
- Routing to an Emergency Volunteer Center or Donations Management Center; and
- Correcting various rumors, including outdated or “bad” information.”

Long-Term Use of Social Media

“As with all activities and technologies, the longevity and success of social media use is predicated upon the sustainability and scalability of the processes and procedures that support it. It is critical that agencies, when choosing to adopt, implement, and integrate social media, consider and address the activities needed to support them. These include: personnel (job descriptions, education and training requirements, etc.); policy and plans (standard operating procedures; legal, security, and privacy concerns; etc.); guidance and direction (e.g., search parameters for monitoring, process for reporting, decision-points, etc.); funding (short- and long-term); and technology (available and appropriate tools to be used, access to them, and understanding and familiarity of them, etc.).”

Challenges to Social Media Integration

“Despite the usefulness and value of social media, there are challenges that may impede the integration of social media. These may include sorting through a large volume of information, deciding which platforms or tools to use, technical limitations, and engaging stakeholders—to name a few.”

Source: DHS. 2016. From Concept to Reality: Operationalizing Social Media for Preparedness, Response and Recovery. Department of Homeland Security. DHS Virtual Social Media Working Group (VSMWG) and DHS First Responders Group. <http://bit.ly/2fmc0vq>.

Conclusion

The changing shape of homeland security and emergency management in the coming years will demand that communications take a larger role in all emergency operations and programming. Incorporating digital and social media forms and functions into communications plans and strategies and adapting to new technologies to gleam the data generated by social media users will be the order of the day for all emergency management agencies. Emergency and homeland security officials can no longer avoid communicating with the media and the public. Emergency agencies must accept the expanded and changing role of communications in all four phases of emergency management and embrace it as a valuable tool in meeting the needs of the public.

Case Study 1 Hurricane Sandy

Hurricane Sandy made landfall in the United States on the night of Oct. 29, 2012 after first striking Jamaica, Hispaniola, the Bahamas, Cuba, and Bermuda.

At its peak, Sandy was a Category 1 size hurricane and prior to making landfall in New Jersey, Sandy caused 72 deaths in the United States and has been ranked as the second most costly hurricane at an estimated \$68 billion in damages according to the National Hurricane Center. Hurricane Katrina still ranks as the most costly hurricane at \$125 billion in estimated damages. (NOAA, 2013)

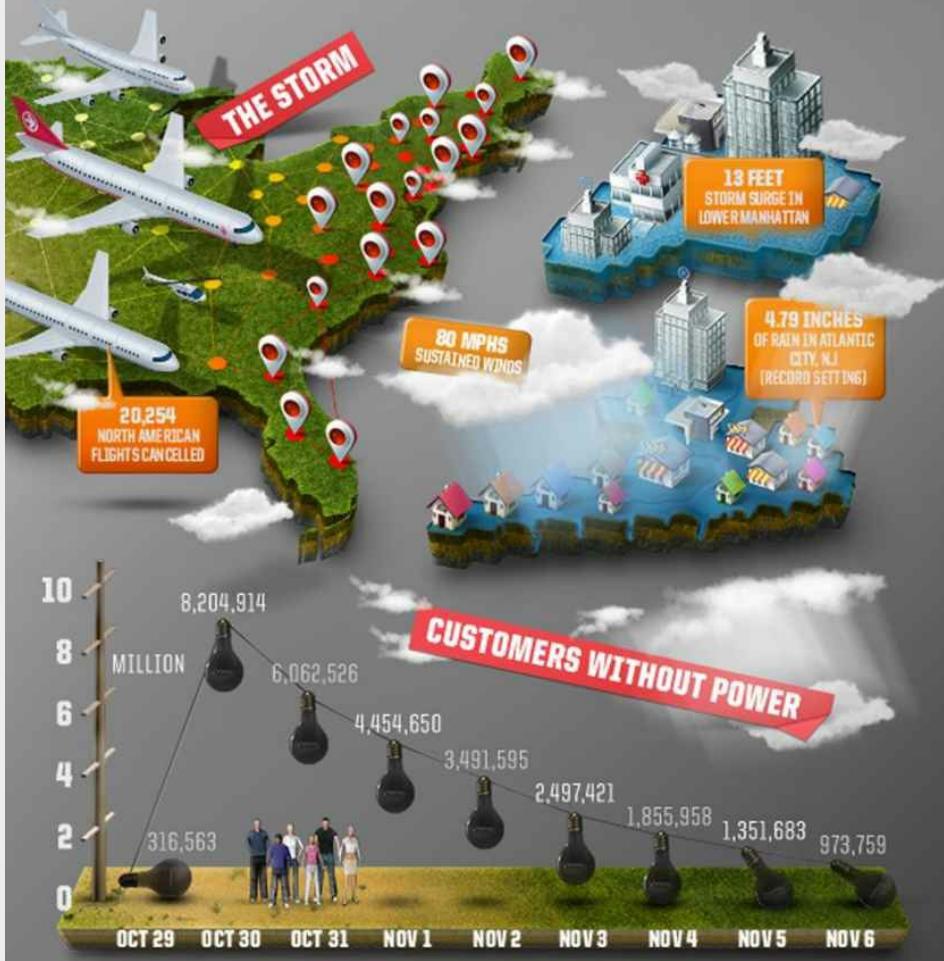
Sandy's major impacts in the United States occurred in the states of New York and New Jersey, and in New York City. New York City is the biggest media market in the United States and coverage of Sandy by traditional media was extensive and social media use during the storm set records.

Hurricane Sandy was the most social media-covered disaster to date. A Nov. 12, 2012 post on the Mindjet website by Pete Hunt entitled, "Hurricane #Sandy: Socializing Traditional Media" noted, "Sandy was the top phrase on Facebook, where users speculated about the storm's damage and provided updated information about their location and safety. More than 800,000 Instagram photos featured a "#Sandy" hashtag. Some 20 million tweets included storm-related terms. Social media's comparative advantage during Sandy was considerable. Emergency information from government officials and news sources was disseminated as quickly as people could retweet it." (Brown, 2012)

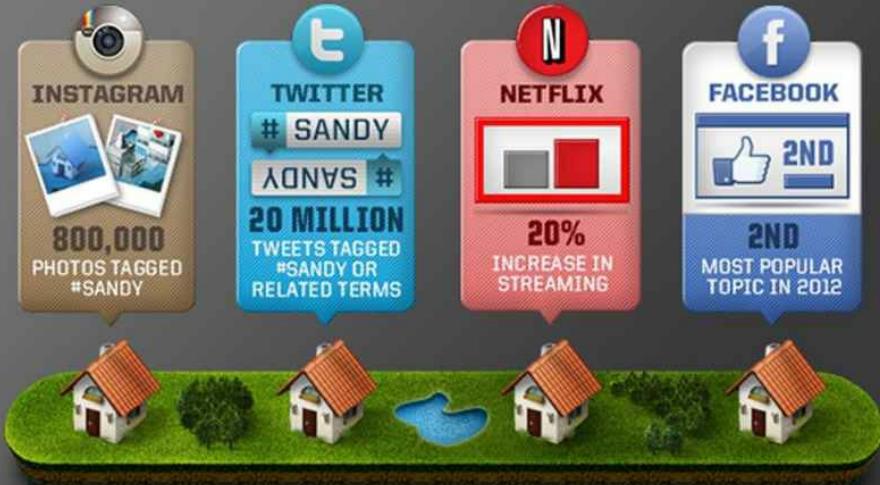
An infographic created by the Mindjet website vividly illustrates the extensive use of social media outlets including Facebook, Twitter and YouTube before, during, and after Hurricane Sandy made landfall (See Fig. 5.4)

The Social Storm

Superstorm Sandy created havoc and extreme hardship across the eastern seaboard of the United States. In addition to the record setting rains, the storm also produced a deluge of digital data on social media platforms. But widespread power outages soon reduced access to tech and mobile devices. Aid agencies have collaborated to supply food, shelter and support to afflicted regions.



THE SOCIAL MEDIA RESPONSE



EVEN IN MOMENTS OF CRISIS. PLAN. DO. WORK INSPIRED.

SOURCES: ENERGY.GOV, INC.COM,
JUSTMEANS, HUFFINGTON POST,
WASHINGTON POST, SF GATE, DNA INFO

mindjet

GRAPHIC BY DEEG3

FIGURE 5.4 “Hurricane #Sandy: Socializing Traditional Media” *Social Infographic courtesy mindjet.com: <http://bit.ly/2enzEmV>.*

An article entitled, “Social Media and Hurricane Sandy” written by Allison Gilbert and posted on the digital Ethos website on Nov. 15, 2012 stated, “Social media has been invaluable in the case of Hurricane Sandy, the worst storm to ever hit parts of Long Island, NY. Facebook has become an invaluable tool resulting in a means of communication, spreading information and fundraising. Ironically, the people with the least access to the Internet as a result of the storm are the ones who may benefit the most from social media. Those who have ventured into the devastated areas have been able to get information out so that help can come in from informing those outside of the devastated areas.” (Gilbert, 2012)

Gilbert continued, “These Facebook groups and pages are accessible 24/7. They are alive long after televised bytes pass on as yesterday’s news. Social media continues to be a source of support and assistance particularly to the residents of New York and New Jersey.” (Gilbert, 2012)

Social media became the go to source for people looking for gasoline, shelter, food, water, and immediate assistance after Sandy made landfall.

In addition, FEMA set up a Hurricane Sandy landing page at that “provided all of the specific relief, response and recovery information related to Sandy. Information for disaster survivors included how to get immediate help, how to locate a shelter, how to locate a FEMA Disaster Recovery Center, and access to the state-specific disaster declarations. This information was also ultimately provided in 18 languages aside from English. Links were provided to all applicable state and local websites, and information was provided for those who want to help (donations and volunteering).” (Virtual Social Media Working Group and DHS First Responders Group, 2013)

Hurricane Sandy also marked a shift in and an increased dependence on the use of social media by government agencies—an acknowledgment and embrace of social media’s critical role in disasters in disseminating information, connecting people and controlling rumors. In Sandy—more than ever before—government agencies turned to mobile and online technologies to communicate with the public and response partners. (Cohen, 2013)

A report prepared by the Virtual Social Media Working Group and DHS First Responders Group noted that Sandy “marked a shift in the use of social media in disasters. More than ever before, government agencies turned to mobile and online technologies before, during, and after Sandy made landfall, to communicate with response partners and the public in order to share information, maintain awareness of community actions and needs, and more.” (Virtual Social Media Working Group and DHS First Responders Group, 2013)

FEMA and FEMA Administrator Craig Fugate, the National Weather Service, the New Jersey Office of Emergency Management (NJOEM) and New Jersey Governor Chris Christie, the New York State Division of Homeland Security and Emergency Services (NYS DHSES) and New York Governor

Andrew Cuomo, and the New York City Office of Emergency Management and Mayor Michael Bloomberg all used Twitter and Facebook to relay evacuation orders, direct resources where they were needed, provide victims with updates about aid, shelter, and storm conditions.

On Oct. 29, the day Sandy made landfall, FEMA reached more than 300,000 people on Facebook (up from an average of 12,000 per day) and reached 6 million Twitter users with one message. (Cohen, 2013)

FEMA administrator Craig Fugate tweeted regularly before, during, and after the storm at one point “providing more than 30,000 people with tips and links to help people sift through all the news about Sandy.” (Baylon, 2012)

One report noted, “The National Weather Service also updates its Twitter feed with information from the National Hurricane Center, but NSW’s Facebook page appears to have more traction, with more than 100 people clicking “like” on every post. Facebook has been especially useful for the National Oceanic and Atmospheric Administration, which has been updating users with compelling pictures as well as satellite images and storm-tracking diagrams of Sandy.” (Baylon, 2012)

The New Jersey Office of Emergency Management (NJOEM) has posted messages on their Facebook page continuously since the lead up to Hurricane Sandy making landfall. See examples of NJOEM tweets below:



- **New Jersey Office of Emergency Management** October 29, 2012
- Regarding travel on the road, please keep these points in mind:
-
- - Don't go on the roads unless you are essential to the disaster response.
-
- - There is no ban on driving, BUT there are travel restrictions in many counties e.g., Atlantic, Cumberland, Camden. The Parkway is closed from Exit 38 South and there is the possibility of expanding the closure.
-
- - Regardless of current rain condition...See
[More](#) 19023177 Like · Comment



New Jersey Office of Emergency Management shared NOAA NWS National Hurricane Center's photo.
October 29, 2012

At 3 pm EDT, Hurricane Sandy was centered just 85 miles southeast of Atlantic City, New Jersey, moving toward the northwest at 28 mph. Landfall is expected this evening along the extreme southern New Jersey coastline or central Delaware. Get the latest at www.hurricanes.gov and, for local impacts, go to www.weather.gov



New Jersey Office of Emergency Management

SEG Cares @PSEGcares

PSE&G crews are working hard to restore power to customers without electricity.
We know it's difficult and appreciate your patience

1445611

Like · Comment



New Jersey Office of Emergency Management

October 31, 2012

RECOVERY BEGINS TODAY

Recovery begins today. We acknowledge and respect our feelings of sorrow and loss. At the same time, we draw on our resilience and remember that we are all in this together.

For now, a few items that residents are asking about:

- We'll have more about recovery programs after President Obama's visit and tour of impacted areas with Governor Christie. For now, a coupl...[See More](#)

2626084

[Like](#) · [Comment](#)

Source: New Jersey Office of Emergency Management (NJOEM). <http://bit.ly/2fEHX3n>.

NJOEM was also very active on Twitter during Hurricane Sandy. On Oct. 29 alone NJOEM tweeted 18 messages and retweeted over 75 messages from other emergency agencies and government officials including FEMA, CDC, NOAA, power companies, New Jersey Governor Christie, FEMA Administrator Craig Fugate, New Jersey Transit, New Jersey State Police, National Weather Service, and Red Cross New Jersey. NJOEM also retweeted numerous tweets generated by JSHurricaneNews, self-described as “A bottom-up, two-way news outlet, JSHN is news for the people, by the people. JSHN covers news, traffic, and weather. News you can use.” (New Jersey Office of Emergency Management, 2013)

During the same day (Oct. 29), the New York State Division of Homeland Security and Emergency Services (NYS DHSES) tweeted 39 messages and retweeted 13 messages from various other sources including New York Governor Andrew Cuomo, MTA, NWS, NY Department of Labor, CDC and the New York City Office of Emergency Management. (New York State Division of Homeland Security and Emergency Services, 2013)

Local governments in the disaster zone made use of social media outlets. The City of Summit, NJ Public Information Annex posted 65 messages on the City Facebook Page and over 200 tweets on two accounts. (City of Summit Office of Emergency Management, undated)

Voluntary agencies also made extensive use of social media. The American Red Cross offered a Hurricane App for both iPhone and Android device users to monitor conditions in their neighborhood and throughout the storm track, prepare their families and homes, find help and let others know they are safe “even if the power is out.” (Cohen, 2013)

One report noted on Oct. 29 that, “People have also been using the American Red Cross’ application, The Hurricane, to update Twitter and Facebook, as well as to email and text family and friends that they are safe.” (Baylon, 2012)

FEMA noted in its Hurricane After Action Report that, “Smartphone apps provide critical information to Sandy responders and survivors. Several organizations, including the American Red Cross, the US Department of Veterans Affairs (VA), and FEMA have developed smartphone applications designed for rapid dissemination to survivors and disaster workers. Among the various applications used during Sandy were the American Red Cross’s Hurricane app, the VA’s Psychological First Aid (PFA) app, and FEMA’s Emergency Preparedness app. Over 100,000 users downloaded the American Red Cross’s Hurricane app to monitor and track the storm, prepare for the disaster, and locate shelters. The VA’s PFA app—downloaded more than 1800 times—provides guidance on administering psychological first aid to adults, families, and children. The FEMA Emergency Preparedness app—downloaded by more than 50,000 users—provides an interactive checklist for emergency kits, maps with disaster recovery and shelter information, and an online application for assistance. Despite widespread power and cellphone outages, the use of smartphone applications provided necessary information to both survivors and responders.” (FEMA Hurricane Sandy After Action Report, 2013)

Even before Sandy, New York City had 3 million followers across more than 300 city accounts on Facebook, Twitter (in both English and Spanish), Google+ Tumblr, YouTube and more. Throughout response and recovery, these channels made it easy for the city to share information in various formats, and enabled people to find and consume information in ways they preferred and were used to. (Cohen, 2013)

The public could also sign up to receive text alerts from the Mayor’s Office Twitter account, @nycmayorsoffice, which served as a great alternative digital resource to the city’s website, once people lost power and Internet access. (Cohen, 2013)

As noted in New York City’s Hurricane Sandy After Action report, “During the storm, the City pushed out information through as many channels as possible. Major television networks, radio channels, third-party websites, NYC.gov, and the Mayor’s Office and Mike Bloomberg YouTube channels carried live press conferences while City Twitter feeds reinforced the most critical messages. OEM uses an additional set of tools to broadcast information to the general public, including Notify NYC, the City’s flagship emergency update system that sends alerts via landline, mobile, text, email, and Twitter to more than 165,000 registered users. Notify NYC’s reach expanded by nearly 15% during Sandy, gaining more than 9600 direct subscribers and another 12,000 to the Notify NYC Twitter account.” (NYC Hurricane Sandy After Action Report, 2013)

Government agencies posted short videos concerning Hurricane Sandy on YouTube. FEMA produced over 130 short videos concerning relevant to Sandy covering topics like how to register for FEMA assistance; FEMA’s Public Assistance program; national guard efforts in Sandy; the role of voluntary agencies in Sandy recovery; mitigation and preparedness tips; beware of fraud; how to care for your pet; small business information assistance; and more.

(FEMA.gov, 2013)

A sampling of Hurricane Sandy YouTube videos can be accessed at found at <http://bit.ly/2eapmeI>.

And the public used social media to update government agencies on conditions on the ground, to ask for help, to inform deployment of resources decisions:

- Throughout the storm, Mayor Bloomberg's Office monitored social media for public reactions to the storm, sending reports to City Hall on a daily basis. Questions asked on Twitter were responded to directly.
- FEMA had a team watching the nearly 20 million Twitter messages posted about Sandy to better identify what was happening on the ground and put out timely safety information.
- Throughout the storm, the Red Cross pulled more than 2 million posts for review, using the word "shelter" and other specific keyword searches relevant to Red Cross services. Thirty-one digital volunteers responded to 2386 of the reviewed posts. About 229 posts were sent to mass care teams, and 88 resulted in a change in action on ground operations. (Cohen, 2013)

FEMA used Crowd Sourcing technology for "Volunteers from across the country collaborated online to assist survivors in the immediate aftermath of Sandy. For the Humanitarian OpenStreetMap Team's MapMill project, volunteers used aerial imagery from the National Oceanic and Atmospheric Administration and the Civil Air Patrol to assess damages to buildings and infrastructure. Working mostly on Nov. 1–3, over 6000 volunteers assessed the damage from aerial imagery as light, moderate, or heavy. Volunteers completed over 137,000 assessments of more than 35,000 images. The Humanitarian OpenStreetMap Team then used the results to create a color-coded grid map depicting damages throughout the area. To expand distribution, Google included the map and images on its Sandy CrisisMap, and FEMA included it on the Agency's internal GeoPortal site. The effort provided a powerful example of the possibilities that crowd-sourcing holds for the future. The challenge for FEMA will be to determine how to further use crowd-sourced information to inform decision-making and disaster assistance programs." (FEMA Hurricane Sandy After Action Report, 2013)

Social media tools—including Twitter, Facebook, and photo-sharing platforms—were used to verify information and dispel rumors. For example, when false reports and images began circulating on the Internet, including a photo of the New York Stock Exchange under three feet of water, first responder agencies such as the New York City Fire Department posted messages on Twitter and other social media sites to correct misinformation. (Cohen, 2013)

FEMA launched a Hurricane Sandy: Rumor Control page, which helped to distinguish the truth from false information about contractors, cash cards, food stamps and shelters. (Cohen, 2013)

In the recovery period for Hurricane Sandy, the Federal government has established a webpage entitled "Hurricane Sandy Recovery" on its USA.gov website that provides links to a wide variety of government recovery programs

and apps from agencies such as FEMA, HHS, HUD, USDA, the American Red Cross, and others. This webpage provides updates on government recovery activity and links to how individuals can apply for government assistance, find temporary housing, and access health and safety information. (USA.gov, 2013) New Jersey Office of Emergency Management, the New York State Division of Homeland Security and Emergency Services, and the New York City Office of Emergency Management also continue to post Hurricane Sandy recovery information on their websites and use social media outlets to get recovery news to the public.

Case Study 2 Social Media Saves Lives in Haiti

On the 12th Jan. 2010, a 7.0 magnitude earthquake scale struck near Port au Prince in Haiti killing more than 220,000 and displacing 1.7 million. Almost immediately, victims and first responders turned to social media to save lives.

Within hours, Haitians could send text messages for help over cellphones to a newly created emergency texting number “4636.” This equivalent to “911” in the United States was literally set up overnight by an ad hoc team—“a social media innovator at the State Department, a Swiss graduate student in Boston, a recent Stanford University graduate who devised a low-cost way for hospitals in Africa to text message HIV patients in remote villages, and an engineer for Haiti’s biggest wireless company”—who had all been thinking about how best to use the Internet, social media platforms such as Facebook and Twitter, text messaging and other tools to advance democracy, development, and disaster and crisis communications. (Connell, 2010)

The emergency number was advertised over the country’s radio waves and was used by thousands of Haitians to report trapped people, fires, polluted water sources, and requests for food, water, and medical supplies. (Mullins, 2010)

- “Please can someone find some help for my friend 2 children that are alive under their house at 4813 Ruelle Chretien Lalu et Poupla Haiti.”
- “Please tell Mrs Maxime ____ of Boston that by the grace of God that everyone is okay.”
- “Someone please I have a brother in France can someone call and tell him that I am not dead only my house got destroyed the number is ____”
- “My name is Jean ____ my brother is working in Unicef and I live in C____ 11 A____ I have 2 people that is still alive under the building still! Send Help!”(Hodge, 2010)

Volunteers from the Haitian diaspora community who speak French and Creole were recruited by Patrick Meier, the Swiss graduate student at Tufts who helped create the 4636 number, to translate the thousands of messages. (Meier, 2012) The messages were linked to “Ushahidi”—a Web portal born in 2008 to help citizen activists track post-election violence in Kenya. “Working with more than 1000 Kreyol and French-speaking volunteers from 49 countries, raw text messages in Haitian Kreyol were turned into categorized English

messages with precise coordinates with an average turnaround of just 10 minutes." (Munro, 2013)

Over 100 graduate and undergraduate student volunteers at the Fletcher School of Law and Diplomacy in Medford, Massachusetts were trained on how to monitor social and mainstream media for relevant, mappable content. They ran a situation room in the school's basement where they plotted the messages on a crisis map first using Google Maps and later OpenStreetMap, a crowd-sourcing tool that operates like Wikipedia, to pinpoint exactly where help was needed. (Connell, 2010) From there they instant-messaged the most urgent pleas to the US Coast Guard, the Red Cross, and other relief and rescue agencies, telling them where to search for people in need of help. (Giridharadas, 2010)



Haitian volunteers crisis mapping Haiti with Sabina Carlson in the Haiti Situation Room at The Fletcher School. Sabina, who speaks fluent Creole, was the project's volunteer liaison for the Haitian Diaspora. Credit: Ushahidi Haiti Project (UHP).

These "digital humanitarians" began to manually monitor hundreds and hundreds of online sources for information on Haiti almost 24/7. The Ushahidi Haiti Crisis Map became a live map with some 2,000 individual reports added during the entire project. (Meier, 2012)

Haiti
The 2010 Earthquake in Haiti

[SHARE](#) [PRINT](#) [SEARCH](#) English (US) [SUBMIT AN INCIDENT](#)

[HOME](#) [REPORTS](#) [SUBMIT AN INCIDENT](#) [GET ALERTS](#) [CONTACT US](#) [HOW TO HELP](#)

[ABOUT US | A PROPOS DE | ENFOMASYON](#)

FILTERS → REPORTS NEWS PICTURES VIDEO TODO VIEWS → CLUSTERS TIME



From: To: [PLAY](#)

Jan 2010 Apr 2010 Jul 2010 Dec 2010

20
15
10
5

6 Jan 11 Jan 16 Jan 21 Jan 26 Jan 31 Jan

How to Report

1. By sending a message to 447624802524
2. By sending an email to haiti@ushahidi.com
3. By sending a tweet with the hashtag #haiti or #haitiquake
4. By filling a form at the website

Incidents (from the map, listed in chronological order)

TITLE	LOCATION	DATE
Looking for the Dorce Family	tabare, haiti	Jan 13 2010
Looking for James Collin, Alourdes Thomas...	rue malval	Jan 13 2010
More photos and videos of earthquake aftermath	Port-au-Prince	Jan 13 2010
Hospital Frances	Port-au-Prince	Jan 13 2010
Hospital Universitario De Haiti	Hospital Universitario De Haiti	Jan 13 2010
MSF Teams Set up Clinics to Treat Injured	Port-au-Prince	Jan 13 2010
Over 100 UN personnel trapped in collapsed...	UN Headquarters, Port-au-Prince	Jan 13 2010
The National Palace, Before & After	National Palace, Avenue de la Liberte Port-au-Prince, Haiti	Jan 13 2010
Karibe Hotel Collapsed	Karibe Hotel, Juvenat 7 Petion-Ville, HAITI (near Union School. A map to the location of the hotel is here: http://www.karibehotel.com/karibehotellocation.asp	Jan 13 2010
PAP Airport	PAP Airport, Port-Au-Prince	Jan 13 2010

[View More...](#)

Official & mainstream news

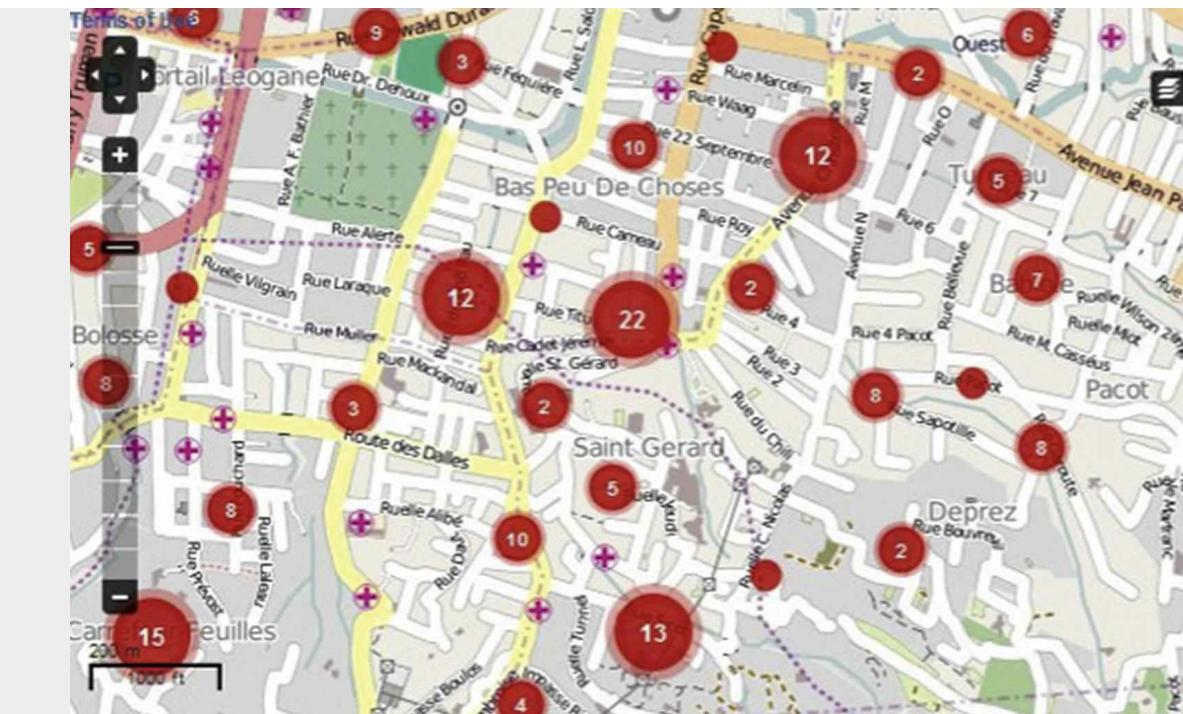
TITLE	SOURCE	DATE
IMF says stands ready to aid Haiti	Reliefweb	Jan 13 2010
'Thousands dead' in Haiti quake	BBC Lead Story	Jan 13 2010
Haiti: thousands feared dead in massive...	Reliefweb	Jan 13 2010
FACTBOX-Haiti quake had shallow source....	Reliefweb	Jan 13 2010
American Red Cross Pledges Initial \$1 Million...	Reliefweb	Jan 13 2010
CRUZ ROJA ACCIONANDO ANTE TERREMOTO EN HAITA...	Reliefweb	Jan 13 2010
Personnel to be Deployed to Haiti to Assist...	Reliefweb	Jan 13 2010
Government Mobilising Relief Supplies to...	Reliefweb	Jan 13 2010
Disaster Risk Reduction in Haiti	Reliefweb	Jan 13 2010
Disaster Risk Reduction in Haiti	Reliefweb	Jan 13 2010

[View More...](#)

[Home](#) | [Report an Incident](#) | [Get Alerts](#) | [How to Help](#) | [About](#) | [Contact Us](#) | [Blog](#)

Copyright © 2009 Ushahidi.com. All Rights Reserved.

Provide Feedback



Close-up of the Haiti Map. Each number represents the individual number of reports within the area. Users could zoom in further to see the individual reports.

Credit: Ushahidi Haiti Project (UHP).

These messages and associated geographic information were available to anyone with an Internet connection. Ushahidi provided the international community with access to actionable intelligence collected directly from the Haitian population via text messages and through social media sources, allowing responders to quickly and effectively target resources in the rapidly changing disaster environment. (Heinselman, 2010). Within 4 days of the earthquake, some first-responder teams began to use the Ushahidi map and information stream to determine how, when, and where to direct resources.

On Jan. 19th, just a week after the earthquake, the US Coast Guard emailed the project with the following question: "I am compiling reports from Haiti for the US Coast Guard and Joint Task Force Command Center. Is there someone I can speak with about how better to use the information in Ushahidi?" Meier explained that, "We set up a dedicated Skype chat with the Coast Guard to fast-forward the most urgent (and actionable) content that was being added to the live Haiti Crisis Map. We were also contacted by an American Search and Rescue team in Port-au-Prince who urgently needed GPS coordinators for the locations of trapped individuals." (Meier, 2012)

Secretary of State Hillary Clinton summarized the impact of crisis mapping in her “Internet Freedom” speech on Jan. 21, 2010, saying, “The technology community has set up interactive maps to help us identify needs and target resources. … [O]n Monday, a seven-year-old girl and two women were pulled from the rubble of a collapsed supermarket by an American search-and-rescue team after they sent a text message calling for help.” (Clinton, 2010)

The response community echoed Clinton's praise of the power of this new technology. The US Marine Corps said: "I cannot overemphasize to you what the work of the Ushahidi/Haiti has provided. It is saving lives every day. I wish I had time to document to you every example, but there are too many and our operation is moving too fast." (Meier, 2012)

FEMA's Administrator Craig Fugate shared the following on his Twitter feed:

Crisis Map of Haiti represents the most comprehensive and up-to-date map available to the humanitarian community <http://haiti.ushahidi.com/>

4:00 PM Jan 22nd via web

CraigatFEMA
Craig Fugate

© 2010 Twitter About Us Contact Blog Status Goodies API Business Help Jobs Terms Privacy

Ultimately both FEMA and the US Coast Guard determined that the Ushahidi Crisis map was the most accurate graphic tool of the emergency in Port au Prince. (Meier, 2012)

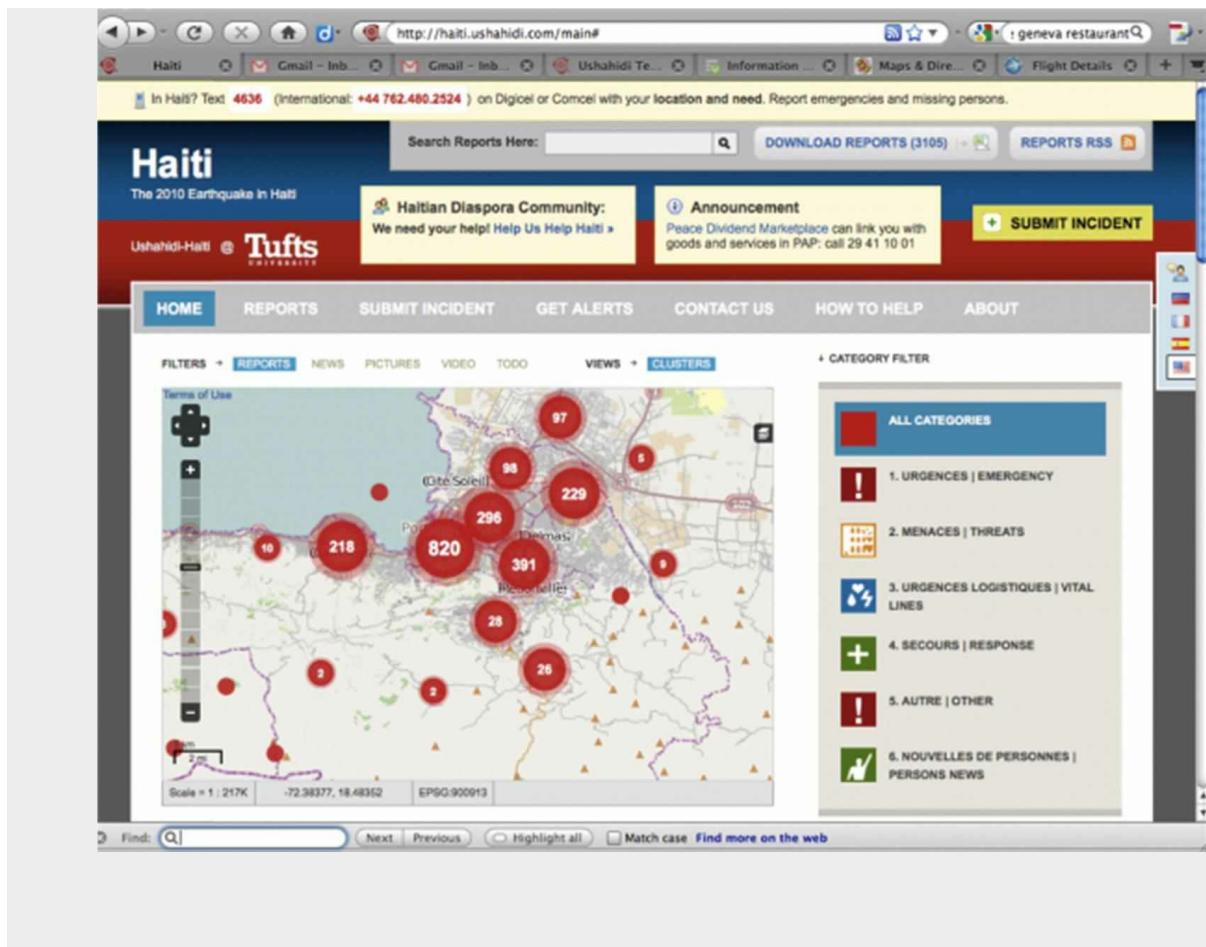
This is what the map looked like at the end of the two-month operation:

According to Robert Munro, the Stanford graduate fellow who helped set up the "4636" emergency number and the translation system, "It was the first time that crowdsourcing had been used for real-time humanitarian relief and it is still the largest deployment of humanitarian crowdsourcing to date." (Munro, 2013)

"Haiti was a turning point in terms of the emergence of collaborative and distributed organizations and the recognition that social media serves a broader purpose for emergency managers than tweeting what you are eating about lunch," explained Dr. Jeannette Sutton, a disaster sociologist who studies the dynamics of online communications. (Sutton, 2013)

The Ushahidi Haiti Project demonstrated the potential of crowd-sourced maps for targeted disaster response, and provided a useful foundational model

for the international community to build on and refine. (Heinzelman, 2010) According to Patrick Meier, "These incredible efforts following the Haiti earthquake demonstrated a huge potential for the future of humanitarian response. Student volunteers in Boston working online with the Diaspora using free mapping technology from Africa could help save lives in another country thousands of miles away without ever setting foot in said country." (Meier, 2012)



From The Fletcher School Situation Room: “Is it Life or Death?”

Excerpts from a blog from volunteer Denise Roz Sewell.



Login Join Twitter!

4636: Demande aide 4636 je suis perdu
enbas une maison 2 etage no 147 av
christophe chanel cafour Ph. 38553243
#rescuehaiti

4:18 PM Jan 23rd from web



Natalija_L

Natalija L

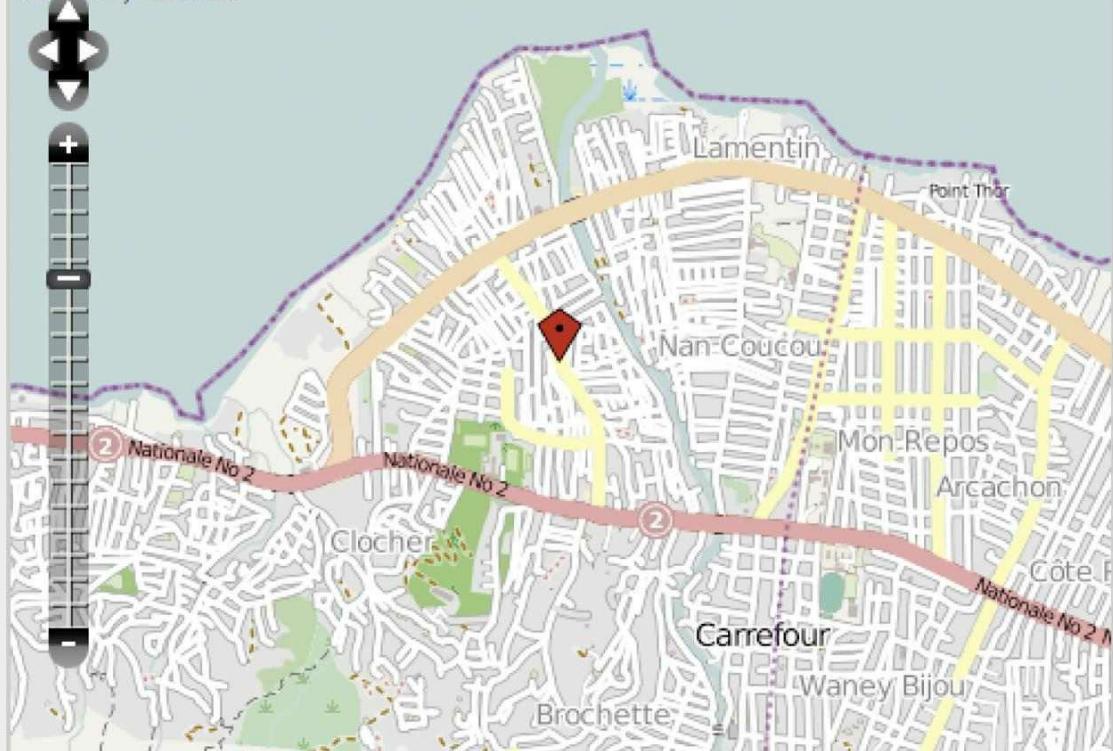
I had just received a twitter message on the Haiti Ushahidi website, saying that not only were people still trapped in a building in Port-au-Prince but that one among their party was badly injured. Since this report was from twitter, I turned to one of our Haitian volunteers to confirm the information. Using our SitRoom GoPhone (T-Mobile, of course, for its free calls to Haiti), we called the phone number left on the report, and four very distressed Haitians picked up on the other line. They were on the second floor of a factory, unable to leave and unable to get help for their bleeding friend. I took this information and instantly mapped it. Hypercube and Google Earth are constantly open windows on my desktop, and within 5 minutes at most, I can find coordinates to most locations in Haiti.

Incident Location

Latitude: 18.544389

Longitude: -72.416961

-72.43541, 18.53389



City, State and/or Country

FIND LOCATION

* If you can't find your location, please click on the map to pinpoint the correct location.

When I learn of someone bleeding on the second floor of a Haitian factory, I can confirm it, map it, and send it to our contacts in the United States Coast Guard within 15 minutes via email or Skype. Roz: So we know we talked to two people that were on the scene, and we asked them if they were okay and she said that three people were okay and one was not. We asked them if that person was bleeding and then they said yes, and then the call was cut off. It sounded like they were inside, not outside, it had a tunnel effect, similar to a factory. Coast Guard: Is your opinion that they are trapped, crushed, just stuck in a house that they can't get out of due to other injuries? Roz: In my opinion, it seems that they are stuck in an unsafe or that the person is too injured to be moved. They were speaking as if the situation was very urgent. Roz: GPS=18.528995, -72.406196 Coast Guard: Working on it after this, the USCG deploys a team and a helicopter to the coordinates that we gave. So yes, it was life or death, but this time our work allowed us to say 'life.'



Photo: US Department of Defense.

Sewell, Denise Roz (2010). Blog from the Fletcher School Situation Room: "Is it Life or Death?" January 26, 2010. <http://bit.ly/2eISTrR>.

Important Terms

Traditional Media
Social Media
Situational Awareness
Media Partnership
Leadership Commitment
Communications
Inclusion Communications Plan
Messages
Messengers
Facebook
Twitter
YouTube

Self-Check Questions

1. Identify and discuss the four critical assumptions underlying the crisis communications efforts of the Federal Emergency Management Agency (FEMA) in the 1990s.
2. Discuss how the role of the traditional media in crisis communications has changed.
3. Discuss the emergence of social media outlets such as Twitter, Facebook and YouTube as a preferred means of communications before, during, and after a disaster event.
4. Discuss how information posted on social media sites might be harvested by government officials in order to increase their situational awareness and make resource allocation decisions.
5. Discuss how emergency managers can “operationalize” data generated by social media users before, during, and after a disaster event.
6. Discuss how emergency managers/homeland security officials can build an effective crisis communications strategy in a changing media world.
7. Discuss the role of social media outlets before, during, and after Hurricane Sandy made landfall in the states of New Jersey and New York.

Critical Thinking

Do you think that there has been adequate progress in working to make crisis communications a priority and developing a functioning capability in emergency management/homeland security agencies? What do think will happen in the future?

Key Terms

Comprehensive Emergency Management: An emergency management philosophy that seeks to reduce risk and prevent injuries, damages, and fatalities by treating hazards before, during, and after an event has occurred. There are generally four accepted functions performed in comprehensive emergency management: mitigation, preparedness, response, and recovery.

Crisis Communication: The provision of timely, useful, and accurate information to the public during the response and recovery phases of a disaster event.

Mass Media: Channels of communication for popular consumption, which could include books, magazines, advertisements, newspapers, newsletters, radio, television, the Internet, cinema, theater, and videos, among many others.

National Terrorism Advisory System: A robust terrorism advisory system that provides timely information to the public about credible terrorist threats and replaced the former color-coded Homeland Security Advisory System (HSAS).

Traditional News Media: A subcomponent of the mass media focused on presenting current news to the public usually defined as television, radio, and print.

Ready.gov: A government-sponsored website developed by the Advertising Council to educate the public, businesses, and children about hazard risks in the United States.

Risk Communication: Any communication intended to supply laypeople with the information they need to make informed, independent judgments about risks to health, safety, and the environment (Morgan et al., 2002).

Social media: Internet-based sites such as Facebook, Twitter, YouTube and others where individuals share news about their lives, friends, and businesses, and in disaster events about what is happening to them and their surroundings.

Warning: The delivery of notice of an actual impending threat with sufficient time to allow recipient individuals and communities to take shelter, evacuate, or take other mitigation action in advance of a disaster event.

The Disciplines of Emergency Management

Response

Abstract

This chapter describes how local, state, and federal government officials and their partners respond to disasters in the United States. The chapter includes sections discussing local response, state response, volunteer group response, the Incident Command System (ICS), and the National Incident Management System (NIMS), the National Response Framework (NRF), and communications among responding agencies.

Keywords

Emergency management/response personnel; emergency operations plan; emergency support function; first responders; Incident Command System (ICS); incident commander; National Incident Management System (NIMS); National Response Framework and unified command

WHAT YOU WILL LEARN

- The roles and responsibilities of local first responders and emergency managers
- How states are involved in emergency management
- The contribution of volunteer organizations to disaster response efforts
- What the National Incident Management System (NIMS) and the Incident Command System (ICS) are, and how they function
- How presidential disaster declarations occur
- How the federal government provides assistance in the aftermath of a declared disaster
- How the National Response Framework (NRF) works, and how it coordinates the efforts of agencies and organizations in government and in the private and nonprofit sectors

Introduction

Whenever an emergency event, such as a house fire or automobile accident, or a major disaster, such as a flood, earthquake, or hurricane occurs, the first government officials to respond are always the local police, fire, and emergency medical personnel. Their job is to perform rescue, attend to the injured, suppress fires, secure and police the disaster area, and begin the process of restoring order. They are supported in this effort by local emergency management personnel and community government officials.

Emergency events become disasters when the requirements of the event are so great as to exceed the capabilities of the local responders, and when the costs of the damage inflicted exceeds the capacity of the local government to absorb. When this happens, the mayor or county executive must turn to the governor and state government for assistance in meeting the outstanding response requirements, and in helping the community to recover. The governor in turn activates their state's emergency management capability, which is maintained in a state-level office of emergency management and homeland security. The governor also has his or her resources—the National Guard and other state government agencies with resources and services—capable of providing needed assistance to the stricken community.

If the governor determines that the size of the disaster event exceeds the state's capacity to meet the outstanding needs of one or more local jurisdictions impacted, as based on information generated by community and state officials, they will submit a formal request to the president and the Secretary of Homeland Security for a presidential major disaster declaration. This request is prepared by state officials in cooperation with FEMA staff. Each request is analyzed first by the corresponding FEMA Regional Office and then forwarded to FEMA headquarters in Washington, DC where headquarters staff review and evaluate the governor's request. An analysis and recommendation is forwarded to the president, who considers the information at hand and makes a decision to either reject the request or to grant the declaration. Once a declaration is granted, the support of the federal government as defined in the Stafford Act and in the Code of Federal Regulations becomes available.

In Jan. 2008, FEMA introduced the National Response Framework (NRF) "to ensure that government executives, private sector and non-governmental organization (NGO) leaders, and emergency management practitioners across the nation understand the domestic incident response roles, responsibilities, and relationships in order to respond more effectively to any type of incident" (FEMA, 2008). Like the multi-agency response coordination mechanisms that came before it—including the National Response Plan (NRP), which was adopted by FEMA in Dec. 2004 in the aftermath of the Sep. 11, 2001 terrorist attacks, and the Federal Response Plan (FRP) which had guided federal government response activities since the early 1990s—the NRF outlines how the federal government and its partners provide critical emergency assistance across 15 support functions. The third edition of the NRF was updated by

FEMA in 2016. (FEMA, 2016) FEMA also released the National Incident Management System (NIMS) to improve coordination between agencies from the various levels of government (federal, state, tribal, and local), and the different sectors (private, nonprofit, voluntary, and more).

When the president grants a major disaster declaration, federal government departments and agencies involved in the response effort operate according to their accepted roles as defined within the NRF, always in support of local officials, and in partnership with emergency managers, non-governmental groups, and the private sector. This legal and procedural declaration also delineates what specific assistance programs are made available, which typically includes either public assistance, individual assistance, or both, and delineates which specific local jurisdictions are eligible for funding as determined by sustained damages and needs at the county level.

Case Study: Response to Terrorism—The Oklahoma City Bombing

On Apr. 19, 1995, an explosion rocked the federal plaza in Oklahoma City. Within 45 minutes after notification from the Oklahoma Department of Civil Emergency Management, FEMA deployed staff to Oklahoma City. FEMA coordinated the federal response to the Oklahoma City bombing and later worked closely with state and local officials on recovery efforts. The president signed an Emergency Declaration within 8 hours of the occurrence. This was the first time that section 501(b) of the Stafford Act, granting FEMA the primary federal responsibility for responding to a domestic consequence management incident, was ever used. The president subsequently declared a major disaster on Apr. 26, 1995. Because the disaster site was also a federal crime scene, FEMA appointed a liaison to the FBI to coordinate site access, support requirements, control public information, and other issues. The coordinated work among federal agencies in Oklahoma City led to the further clarification of agency and department roles in crisis and consequence management.

Harsh lessons were learned in Oklahoma City. A situation arose when local radio stations requested that all medical personnel should respond to the disaster area. A nurse who answered the call was killed by falling debris while trying to rescue victims in the building. A term constantly used after the bombing was the *Oklahoma Standard*. Oklahoma had personnel on the scene within 30 minutes. Federal officials were notified within minutes of the disaster. Volunteer services were immediate, and because this was a local disaster, everyone took responsibility to do whatever they could to help. Hospital personnel established an effective and efficient triage system. Phone numbers, Internet sites, and briefings were launched within hours of the disaster. The American Red Cross, as in all disasters, was quick to respond with personnel and supplies to help family members of those who were injured or killed in the bombing. The Salvation Army responded within hours with food and supplies. By the end of the day, the Salvation Army had

deployed seven units to provide services to the workers and the victims. Law enforcement and EMS personnel had up-to-date training. Oklahoma had excellent coordination with the Public Works Department, the National Weather Service, and the National Guard. The Department of Public Safety also had a predetermined disaster plan in place.

In the 1990s, the emergency management system in the United States was repeatedly tested by a series of major disaster events that included the 1993 Midwest floods; the 1994 Northridge, California, earthquake; and several devastating hurricanes and tornadoes. In each of these instances, the system was found to be largely effective in tapping into the full resources of the federal government, and bringing together the different partners at the federal, state, and local levels to produce a comprehensive, coordinated, and effective response (Fig. 6.1). The system also leveraged the capabilities and resources of America's cadre of volunteer organizations to provide victims with immediate relief in terms of nutrition, hydration, and shelter. In recent years, government officials and agencies at all levels have begun to expand the capabilities of this system, and to further increase community resilience, by reaching out to the vast business community. The private sector has brought to the table a range of information, capabilities, and resources that has not only filled many of the response and recovery capacity gaps that have persisted, but has also resulted in an overall reduction in community vulnerability.



FIGURE 6.1 Houston, TX, Jun. 6, 2015—FEMA Disaster Survivor Assistance Specialist, Margarita Ramirez, speaks to local residents at a Mobile Registration Intake Center (MRIC) set up at the Meyerland Community Improvement Association, 4999 West Belfort, Houston, Texas. The center will be open 8 am to 8 pm daily until further notice. Jocelyn Augustino/FEMA.

The Sep. 11 terrorist attacks caused government agencies at all administrative levels to reevaluate their response procedures and protocols. The combination of factors that included little to no existing preparation on the part of first responders to deal with terrorist hazards, poor coordination and communications mechanisms between responding agencies, and a lack of adequate responder safety procedures, all led to an epic loss of life among first responders that reached levels several times greater than what is typically sustained in an entire year of activity. The after-action reports and studies conducted led to changes in the procedures and protocols that have in many ways revolutionized the profession. Additionally, the prospect of terrorism has placed an increased focus on ways to better protect first responders from harm in all types of disasters, terrorist or otherwise (see [chapter: Emergency Management and the Terrorist Threat](#)).

The botched response to Hurricane Katrina in 2005 resulted in another reexamination of how all parties should work together when responding to catastrophic disasters. Numerous after-action reports were prepared by the US Senate, the US House of Representatives, and the White House, resulting in FEMA and the Department of Homeland Security crafting the National Response Framework (NRF) and embracing the National Incident Management System (NIMS) as the backbone for coordinating the response to major disasters by federal, state, and local government; voluntary and nongovernmental organizations; and the private sector.

Case Study: The Response to Hurricane Katrina

By all accounts, the response to Hurricane Katrina represented a failure on all levels. According to the White House Report on the disaster, “The response to Hurricane Katrina fell far short of the seamless, coordinated effort that had been envisioned by President Bush when he ordered the creation of the National Response Plan in Feb. 2003” (Townsend, 2006). The Senate report found that “the suffering … continued longer than it should have because of—and in some cases exacerbated by—the failure of government at all levels to plan, prepare for, and respond aggressively to the storm. These failures were not just conspicuous; they were pervasive” (Senate Committee on Homeland Security and Governmental Affairs, 2006). The report concluded that there were many coincident failures, but that four among these deserved special placement given their important role in the disaster. These included:

1. Long-term warnings went unheeded, and government officials neglected their duties to prepare for a forewarned catastrophe.
2. Government officials took insufficient actions or made poor decisions in the days immediately before and after landfall.
3. Systems which officials relied on to support their response efforts failed.
4. “Government officials at all levels failed to provide effective leadership” (Senate Committee on Homeland Security and Governmental Affairs, 2006).

The report developed by the House of Representatives to study the event also recognized that systemic weaknesses existed, including that the agencies tasked with responding to catastrophic events were not prepared to do so; the command, control, and coordinate systems in place were not utilized effectively or to capacity; the defenses (levees) built to protect the city were not adequate to hold back the storm surges that occurred; and more. The report noted that the Hurricane Pam Exercise, which was conducted prior to Hurricane Katrina, and which investigated what would happen and what response requirements were likely if a Category 4 or 5 hurricane were to happen, should have been adequately informative for the decision-makers in place about the dangers that existed. On the positive side, the investigators concluded that the accuracy and timeliness of the National Weather Service and National Hurricane Center forecasts prevented further loss of life. Other key findings included:

- The failure of complete evacuations led to preventable deaths, great suffering, and further delays in relief.
- Massive communications damage and a failure to adequately plan for alternatives impaired response efforts, command and control, and situational awareness.
- The collapse of local law enforcement and lack of effective public communications led to civil unrest and further delayed relief.
- Medical care and evacuations suffered from a lack of advance preparations, inadequate communications, and difficulties coordinating efforts.
- Long-standing weaknesses and the magnitude of the disaster overwhelmed FEMA's ability to provide emergency shelter and temporary housing.
- FEMA logistics and contracting systems did not support a targeted, massive, and sustained provision of commodities.
- Contributions by charitable organizations assisted many in need, but the American Red Cross and others faced challenges due to the size of the mission, inadequate logistics capacity, and a disorganized shelter process (Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006).

In summary, these reports found that the government response lacked leadership at the top, was unprepared, operated on poor information and situational awareness, was poorly coordinated, and was incapable of communicating among the various responding agencies and with the general public. All of these factors added up to the confusion, violence, and suffering documented in the first weeks by the media and witnessed by billions across the globe (Fig. 6.2).



FIGURE 6.2 Sunday, Aug. 21, 2016—Piles of debris line the sides of the roads in St. Helena Parish, LA, as residents return to remove water damaged contents from their homes. Photo by J.T. Blatty/FEMA.

This chapter describes how local, state, and federal government officials and their partners respond to disasters in the United States. The chapter includes sections discussing local response, state response, volunteer group response, the Incident Command System (ICS), the National Incident Management System (NIMS), the National Response Framework (NRF), and communications among responding agencies.

The Local Response

Minor, routine emergencies occur on a daily basis in communities throughout the United States. Local emergency services personnel, who are staffed, trained, and equipped to deal with these likely hazards, typically manage the response to such events in a systematic and well-planned manner. In most communities, the emergency services cadre includes firefighters, police officers, and emergency medical technicians, supported by hospital emergency departments, private and public utility response teams, and other local government departments that address isolated needs (e.g., the local departments of health or public works and engineering). These local individuals and agencies assess the incident, secure the scene and maintain order, rescue and treat the injured, contain and suppress fire or hazardous conditions, retrieve the dead, and ultimately, they stabilize the situation.

There are many hazards that cause locally isolated incidents that result in local impacts and which are fully managed at that same local level. For instance, the management of most hazardous materials transportation and storage incidents, structure fires, automobile accidents, civil disturbances, and even localized flooding, are fully within the capabilities of local officials. These events are considered high-likelihood, and low- to moderate-consequence. And given the ever-presence of resource limitations, meeting the needs of these events is likewise what the community bases its capabilities on.

Lower-likelihood, higher-consequence events do happen, however, and when they do the local jurisdictions can quickly become overwhelmed in one or more response functions. Capability shortfalls trigger an escalation of the emergency or even a disaster situation, which prompts a request for assistance from mutual aid partners and/or the state. If the state is unable to manage or meet the needs of the requests that come in, the crisis is further escalated to the federal level through a request by the governor. But no matter the event's size, local officials are always the first responders on the scene, and local incident commanders maintain command and control of the growing response no matter how many outside agencies come to their support (with the exception of incidents involving terrorism or national security risks where either the FBI or DHS will maintain jurisdiction over law enforcement investigations or national security activities).

The United States operates under a decentralized emergency management structure that is in line with federalism. Additionally, the actions which local first responders are driven by are procedures and protocols developed by each of these responding agencies themselves (e.g., fire, police, and emergency medical), rather than being driven by some national- or state-level 'grand plan.' Most jurisdictions in the United States have developed communitywide emergency management (or emergency operations) plans that spell out a range of necessary procedures and protocols appropriate to the hazards to which the community is exposed or at risk from. These plans also identify appropriate roles and responsibilities for each of the agencies and personnel expected to

respond in a wide range of possible disaster scenarios, and clarify the statutory authorities that empower each of those agencies and officials to take the needed actions.

Virtually all jurisdictions structure their emergency plans using an ‘all-hazards’ framework wherein there exists a base plan that addresses functions, actions, decisions, and other factors common to all hazard types, supplemented by functional and hazard annexes that provide greater detail on the incident of function-specific topics. In the aftermath of 9/11, many communities reviewed, reworked, and/or expanded their community emergency operations plans to include procedures and protocols for responding to intentional hazards inclusive of terrorism, in light of the special factors involved in these events. Weapons of mass destruction events, especially those involving bio or chemical weapons and radiological hazards, involve a unique range of participants and actions. These events also require an expanded set of statutory authorities (and may even require relinquishing command authority over part or all of the incident to the federal government).

Despite the uniqueness of most local plans, there has been a push for a standardization of response command, control, and coordination systems ever since many problems were brought to light in the aftermath of Hurricane Katrina. FEMA has since instituted requirements that all state and local emergency responders be trained in the Incident Command System (ICS) and become NIMS compliant in order to retain eligibility for certain federal grant funding. As mentioned in [Chapter 4](#), The Disciplines of Emergency Management: Preparedness, in Nov. 2010 FEMA published the updated version (version 2.0) of a guide entitled *Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Operations Plans*, which is better known among emergency managers as *Comprehensive Preparedness Guide 101 (CPG-101)*. This was the latest in a series of preparedness guides the government has provided to state and local agencies to guide their activities over the past half-decade. CPG-101 was developed to provide local agencies direction in developing their emergency operations plans, in recognition that great leeway exists but that standardization promotes enhanced coordination when it is needed. The guide supports a common understanding of fundamental planning and decision-making practices in hopes of helping local emergency planners to manage their community’s hazard risk profile in a manner that enables greater integration of outside resources when they are needed ([FEMA, 2010a](#)).

Local Emergency Managers

The designated local emergency manager is typically responsible for developing and maintaining the community's suite of emergency plans, including those for emergency operations or response. In many communities, this same individual may serve in another position in the local government, such as fire or police chief for example, and their part-time role as emergency manager is secondary. [Chapter 1](#), The Historical Context of Emergency Management describes how the profession of emergency management in the United States has matured since the 1980s, and this is certainly true at the local level. Today there are many more opportunities for individuals to receive formal emergency management training, and many more communities value a strong emergency management capacity. Response capabilities, both basic and technical, are bolstered through training centers in every state, by education at over 250 junior college, undergraduate, and graduate programs throughout the country, and at FEMA's Emergency Management Institute (EMI) located in Emmitsburg, Maryland. EMI trains over 2 million students in one or more disaster-related courses each year through both on-campus and distance-learning programs (more information on EMI and other emergency management education programs can be found in [Chapter 4](#), The Disciplines of Emergency Management: Preparedness).

In an effort to standardize the profession of emergency management, several certification programs have emerged, the most prominent of which is the Certified Emergency Manager (CEM) designation. CEM was created by the International Association of Emergency Managers (IAEM) in 1993 when a college degree was not required for certification (out of recognition that the academic side of the profession was in its infancy). Since then a combination of professional experience and academic achievement has become the requirement, in addition to a number of other factors that establish what IAEM considers to be the benchmark for the profession. Several other certifications exist, including a number administered by the States (e.g., the Kansas Certified Emergency Manager (KCEM) program and the Certified Texas Emergency Manager (TEM) program).

More and more communities have designated dedicated emergency managers who are responsible for guiding disaster response operations to correspond with these professional developments. The maturing of the emergency management profession has already led to more effective and efficient local responses to disaster events given that the range of individuals trained and certified in emergency management goes far beyond the office of emergency management in many communities.

The State Response

Each of the 50 states and 6 territories that constitute the United States maintains a state government office of emergency management. Funding for state emergency management offices comes almost entirely from the FEMA and state budgets. For years, FEMA has provided up to \$350 million annually to states and territories to fund state and local government emergency management activities. This money is used by state emergency management agencies to hire staff, conduct training and exercises, and purchase equipment. A segment of this funding is targeted for local emergency management operations as designated by the state. State budgets also provide funding for emergency management operations, but this funding historically has been inconsistent, especially in those states with minimal annual disaster activity.

The principal resource available to governors in responding to a disaster event in their state is the National Guard. The resources of the National Guard that can be used in disaster response include personnel, communications systems and equipment, air and road transport, heavy construction and earth-moving equipment, mass care and feeding equipment, and emergency supplies such as beds, blankets, and medical supplies.

In early 2007, with the passing of the John Warner National Defense Reauthorization Act (PL 109-364), the authority of governors to deploy the National Guard was severely eroded. In section 1076 of this Act, the president was given the authority to effectively commandeer total control of this invaluable response resource. It is believed that the provision was a reaction to sentiments that the federal government should have taken over the response to the Katrina disaster and that the military would have been best suited to manage in that case. The National Governor's Association (NGA), an organization representing the interests of the leadership of all 50 states, immediately voiced their opposition to the inclusion of such a provision in the legislation, as they felt it undermined their authority over the National Guard and therefore further limited their ability to ensure the safety of their constituents. The governors wrote, "By granting the president specific authority to usurp the Guard during a natural disaster or emergency without the consent of a governor, Section 1076 could result in confusion and an inability to respond to residents' needs because it calls into question whether a governor or the president has primary responsibility during a domestic emergency" ([NGA, 2007](#)).

During the response to Hurricane Sandy, National Guard assistance was requested in 7 of the affected states (New York, Massachusetts, Virginia, New Jersey, Delaware, Connecticut, and Maryland). Approximately 1500 national guard forces were activated, and provided response assistance at shelters, by clearing debris, performing search and rescue, and delivering equipment and supplies. In this event, Defense Secretary Leon Panetta appointed "Dual Status" commanders to command both Federal and state National Guard forces that were operating in the impacted states, which represented a new mechanism of

command for this resource. Dual Status commanders are appointed to maintain separate chains of command between troops reporting to the Federal and state levels, in hopes of reducing redundancies and confusion like occurred in Hurricane Katrina. The States have signed agreements with the Department of Defense which allows the governor to appoint a Dual Status commander once approval to do so has been granted by the Secretary of Defense (Insinna, 2012).

Response capabilities and capacities are strongest in those states and territories that experience high levels of annual disaster activity. For instance, North Carolina (which faces high risk from hurricanes and floods), Florida (which faces high risk from hurricanes), and California (which faces high risk from seismicity and wildfires), are three states with emergency management capacities that are considered to be very well-developed. Each state prepares a State Preparedness Report that details the emergency management capacity that exists at the state level. Some states choose to publish their reports while others do not. Examples of states with preparedness reports available online include Nebraska and Washington State.

Volunteer Groups' Response

Volunteers have served on the front lines of almost every disaster response. National volunteer groups such as the American Red Cross and the Salvation Army roster and maintain local chapters staffed by both paid and volunteer staff that are trained in one or more aspects of emergency response. These organizations work with local, state, and federal authorities to address the immediate needs of disaster victims. These organizations provide shelter, food, and clothing to victims who have lost their homes to disasters large and small. In many communities, specific volunteer organizations are given defined response roles within the Emergency Operations Plans (EOPs), most commonly for mass care, shelter, psychosocial counseling, case management, and more. Volunteer groups also participate in support of federal efforts, as has been true with Army Corps of Engineers "Blue Roof" operations (wherein blue tarp materials are applied to seal roof leaks and make the home habitable until permanent repairs can be made) and for distribution of emergency supplies at mass care points of distribution (PODs).

The American Red Cross (which is actually a quasi-government organization given that sitting government employees serve on its governing board) is the most widely recognized volunteer group associated with emergency response in the United States. However, it is just one of a much larger community of organizations that includes the Salvation Army, The United Way, Save the Children, Habitat for Humanity, and many more that together meet a great deal of response needs that are not typically addressed by official offices of emergency management at the local, state, or national levels.

Many volunteer groups participating in disaster management are members of associations that exist at the national, state, and local levels called Voluntary Organizations Active in Disasters (VOADs). As of Jul. 2016, the National VOAD, or NVOAD, consists of 58 national member organizations. There are currently 55 state and territorial VOADs, and a growing number of local VOADs involved in disaster response and recovery operations around the country and abroad. Formed in 1970, NVOAD helps member groups at a disaster location to coordinate and communicate in order to provide the most efficient and effective response. A list of the NVOAD member organizations is provided.

Hurricane Katrina changed the landscape in terms of the involvement of voluntary agencies, non-governmental organizations (NGOs), and the private sector in disaster response. The size of Katrina required resources and capabilities beyond the usual government programs. The massive evacuation in advance of the hurricane created an extraordinary demand for shelters, medicine, food, and temporary housing (Fig. 6.3). NGOs and the private sector provided many of the support services to help Katrina victims to get back on their feet. Over 5000 children were separated from their parents in the evacuations, and the NGO National Center for Missing and Exploited Children helped to successfully reunite every one of them. The private sector helped to

raise over \$1 billion for the response and supported a number of activities not covered by government relief programs. For example, Chevron worked with the Early Childhood Institute at Mississippi State University and Save the Children to rebuild and resupply childcare centers across the three Mississippi coastal counties.



FIGURE 6.3 Asbury Park, N.J.—The Calvary Chapel Relief volunteers, a FEMA Voluntary Organizations Active in Disasters (VOAD) organization, works tirelessly on the Asbury Park boardwalk removing damaged boards while prepping the walk for the installation of new boards. VOAD is the forum where organizations share knowledge and resources throughout the disaster cycle to help disaster survivors and their communities through recovery.

Here is a list of NVOAD member organizations:

- Adventist Community Services
- All Hands Volunteers
- Alliance of Information and Referral Systems
- American Radio Relay League
- American Red Cross
- AmeriCares
- Billy Graham Rapid Response Team

- Brethren Disaster Ministries
- Buddhist Tzu Chi Foundation
- Catholic Charities USA
- Churches of Scientology Disaster Response
- Church World Service Emergency Response Program
- Christian Church Disciples of Christ
- Convoy of Hope
- Cooperative Baptist Fellowship
- Direct Relief
- Episcopal Relief and Development
- Feeding America
- Feed the Children
- Habitat for Humanity
- Headwaters Relief Organization
- Heart to Heart International
- HOPE Animal-Assisted Crisis Response
- Hope Coalition America (Operation Hope)
- Hopeforce International
- HOPE Worldwide Ltd.
- Humane Society of the United States
- ICNA Relief USA
- International Critical Incident Stress Foundation
- International Orthodox Christian Charities
- Islamic Relief USA
- Institute for Congregational Trauma and Growth
- The Jewish Federations of North America
- Latter-Day Saints Charities
- Link2Health Solutions
- Lutheran Disaster Response
- Mennonite Disaster Services
- National Association of Jewish Chaplains (NAJC)
- National Organization for Victim Assistance
- Nazarene Compassionate Ministries
- NECHAMA—Jewish Response to Disaster
- Operation Blessing
- Partnership with Native Americans
- Points of Light Action Networks
- The Presbyterian Church in America—Mission North America
- Presbyterian Church USA—Presbyterian Disaster Assistance
- Rebuilding Together
- Samaritan's Purse
- Save the Children
- Society of St. Vincent De Paul
- Southern Baptist Convention
- The Salvation Army
- Team Rubicon

- Tool Bank Disaster Services
- United Church of Christ
- United Methodist Committee on Relief
- United Way Worldwide
- World Renew (NVOAD, 2016, <http://bit.ly/1MjoIUz>)

Case Study: Team Rubicon After Action Report: Moore, Oklahoma Tornado May/Jul. 2013

(The following was excerpted from the report's Executive Summary.)

Brief Operation Summary

From May 20th to Jul. 3rd 2013, Team Rubicon participated in disaster response and recovery operations in the town of Moore, Oklahoma which had been bisected by a massive tornado. During these operations Team Rubicon fielded over 450 volunteers from across the country to conduct damage assessment, prompt home repair, and debris management. This operation was the first time Team Rubicon implemented the Incident Command System for management of a large-scale national response. It was the organization's largest operation to-date and was the first time that Team Rubicon conducted full demolition of damaged structures using heavy equipment. Successful as a whole, the mission presented Team Rubicon with further incentive for its professionalization efforts, tested outstanding developments, and provided further direction for internal development projects.

Collaborating Organizations and Community Partners:

- AmeriCares
- Home Depot
- JCB
- Veterans United
- ITDRC
- Motorola
- Total Radio
- ViaSATGoal Zero
- Palantir
- AmeriCorps
- American Red Cross
- Southern Baptist Disaster Relief

Key Strengths/Accomplishments:

- Achieved nationwide activation of assets within days to support response to affected areas.
- Mobilized more than 450 veterans and civilians in a joint response from across the country.
- Implemented full scope of Incident Command System to support 44 days of continuous field operation.
- Completed more than 450 work orders, saving the community of Moore

nearly \$3.7 million in disaster recovery costs.

- Conducted more than 3000 damage assessments and shared them with local and national emergency management agencies.
- Developed methodology for rapid and effective demolition and debris clearance for communities in need of debris clearance from multiple properties.

Key Lessons Learned:

- Clear communication of expectations is necessary at all levels of incident and organizational management to ensure efficient operations.
- Developing trust between organizational leadership, incident management, and field operators must be a key focus of training and internal programming to ensure effective collaboration.
- Skilled personnel must be available in order to support the delegation of authority necessary to support Team Rubicon's large-scale operations at all levels.
- All missions and organization functions require clearly defined goals and objectives for contributors to work effectively towards mission success.
- Appropriate systems and adequate numbers of trained personnel to execute them are necessary to ensure accountability in all parts of Team Rubicon operations.

Source: Team Rubicon. 2013. Team Rubicon AfterAction Report—Operation: Starting Gun, Moore, OK, 5/20/2013 to 7/3/2013. August 30, 2013. <http://bit.ly/2eFuEe9>

The Incident Command System (ICS)

A difficult issue in any response operation is determining who is in charge of the overall response effort. The Incident Command System (ICS) was developed after the 1970 fires in Southern California. Duplication of efforts, lack of coordination, and communication problems hindered all agencies responding to the expanding fires. The main function of ICS is to establish a set of planning and management systems that would help the agencies responding to a disaster to work together in a coordinated and systematic approach. The step-by-step process enables the numerous responding agencies to effectively use resources and personnel to respond to those in need (Fig. 6.4).



FIGURE 6.4 Snohomish County, Wash., Mar. 25, 2014—The City Hall of Arlington, WA is being used as a Incident Command Post (ICP) in response to the Oso Mudslide. Steve Zumwalt/FEMA—Location: Arlington, WA.

There are multiple functions in the ICS system. They include common use of terminology, integrated communications, a unified command structure, resource management, and action planning. A planned set of directives includes assigning one coordinator to manage the infrastructure of the response, assigning personnel, deploying equipment, obtaining resources, and working with the numerous agencies that respond to the disaster scene. In most instances either the local fire chief or fire commissioner is the Incident Commander.

For the ICS to be effective, it must provide for effective operations at three levels of incident character: (1) single jurisdiction and/or single agency, (2) single jurisdiction with multiple agency support, and (3) multijurisdictional and/or multiagency support. The organizational structure must be adaptable to

a wide variety of emergencies (i.e., fire, flood, earthquake, and rescue). The ICS includes agency autonomy, management by objectives, unity integrity, functional clarity, and effective span of control. The logistics, coordination, and ability of the multiple agencies to work together must adhere to the ICS so efficient leadership is maintained during the disaster. One of the most significant problems before the ICS was that agencies who would respond to major disasters would assign their own commander and there would be power struggles, miscommunication, and duplication of efforts (Irwin, 1980).

There are five major management systems within the ICS: command, operations, planning, logistics, and finance.

- The *command* section includes developing, directing, and maintaining communication and collaboration with the multiple agencies on site, working with the local officials, the public, and the media to provide up-to-date information regarding the disaster.
- The *operations* section handles the tactical operations, coordinates the command objectives, and organizes and directs all resources to the disaster site.
- The *planning* section provides the necessary information to the command center to develop the action plan to accomplish the objectives. This section also collects and evaluates information as it is made available.
- The *logistics* section provides personnel, equipment, and support for the Command Center. They handle the coordination of all services that are involved in the response, from locating rescue equipment to coordinating the response for volunteer organizations such as the Salvation Army and the Red Cross.
- The *finance* section is responsible for accounting for funds used during the response and recovery aspect of the disaster. This section monitors costs related to the incident and provides accounting procurement time recording cost analyses.

In today's world, the public, private, and political values at risk in major emergencies demand the most efficient methods of response and management. Meeting this demand when multiple and diverse agencies are involved becomes a difficult task. ICS allows for a range of command structures that change according to the size, scope, and nature of the incident.

1. *Single Incident Command*: If an emergency or disaster is contained within a single jurisdiction, and no jurisdictional or functional overlap exists between areas or agencies, the incident is managed by a single Incident Commander. This individual has overall incident management responsibility. The vast majority of incidents managed by ICS are handled under this simple structure.

2. *Unified Command*: The Unified Command structure is used when a multiagency response is required, and more than one of these agencies have jurisdictional authority. Agencies operating within a Unified Command structure are able to work together through representational membership that allows the analysis of the information available for the purposes of establishing a common set of objectives and strategies. A single incident action plan is developed according to which the actions of all agencies within the Unified

Command Structure must follow. This structure does not alter ICS operations in any other way. Its purpose is to enable an effective decision-making process for all of the agencies responsible for incident response (Fig. 6.5).

3. Area Command: The Area Command Structure is established when there are multiple ICS incidents being managed by multiple ICS organizations. Area command, which is best for incidents that are not site-specific, are not immediately identifiable, or which are geographically dispersed or which evolve over time, allows for common strategies and priorities over incidents spanning over wide or even disparate geographic areas. A public health emergency that is occurring throughout the country is a good example where Area Command might be utilized. Area Command is very effective at enabling more effective resource allocation across the wider incident area. Area Command structure differs from Unified and Single Incident Command in that there is no operations section (given that operations are conducted on-scene). An Area Command can become a Unified Command when incidents are multijurisdictional or involve multiple agencies.



FIGURE 6.5 Greensburg, Kansas May 19, 2007—An incident command briefing at the FEMA Emergency Operations Center keeps everyone updated on progress and safety issues. Briefings are held twice daily with representatives of relief organizations and town, county, state, and federal governments. Photo by Greg Henshall / FEMA.

Without ICS in place, there often exists:

- A lack of accountability
- Poor communication
- A lack of a planning process
- Overloaded incident commanders

- No method to integrate interagency requirements

Procedures for an Incident Command System

For an ICS to be effective, the following procedures must be followed closely:

- A command post needs to be established
- Proper equipment such as computers, radios, and telephone lines need to be installed and in working order
- A media/press area needs to be established
- Topographic maps need to be located and posted. After tornados, street signs or other identifying landmarks are destroyed, and rescue personnel are unable to use traditional road maps
- A missing persons list must be prepared and positioned in an accessible location
- The movement and location of triage areas and transportation of victims must be monitored
- The ability to maintain continuous communication with local hospitals to monitor the number of victims received must be maintained
- The search area (if needed) must be established and gridded
- The resources available and deployed within the local area must be inventoried
- Tasks that need to be performed and new task development must be monitored

Source: Irwin (2002).

The Incident Commander (IC) delegates functional and operational responsibilities as needed in order to maintain focus on the developing response. They must assign responsibilities and positions, which might include such things as “debriefers,” coordinators, and unit leaders, to manage the command center. As response and recovery proceed, the IC maintains an ongoing dialog with staff and officials to monitor and manage the response and to maintain an overall operational picture of the incident (a Common Operating Picture). The IC likewise evaluates the continuing needs of responders and determines if additional resources are required. Once the incident has been brought under control, after-action reporting, discussion, and evaluation are conducted to evaluate success according to organizational competence and effectiveness (of the IC and the incident command structure in general).

The Federal Response

Once the governor has determined that a disaster event has overwhelmed the capacity of state and local governments to effectively respond and to subsequently fund the recovery effort, the governor forwards a letter to the president requesting a presidential disaster declaration. This is the first step toward involving federal officials, agencies and departments, and resources in a disaster event. If the president declares a major disaster, there are more than 30 federal departments and agencies, as well as nongovernmental organizations including the American Red Cross, who work together within the structure of the National Response Framework (NRF) and as authorized by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, to support the efforts of state and local officials.

The Department of Homeland Security, through FEMA, is responsible for coordinating all federal activities in support of state and local response and recovery efforts in a presidentially declared disaster. In such an instance, FEMA implements the NRF ([Fig. 6.6](#)). FEMA also manages several programs that provide disaster assistance to individuals and affected communities. These programs are discussed in detail in [Chapter 7](#), The Disciplines of Emergency Management: Recovery.

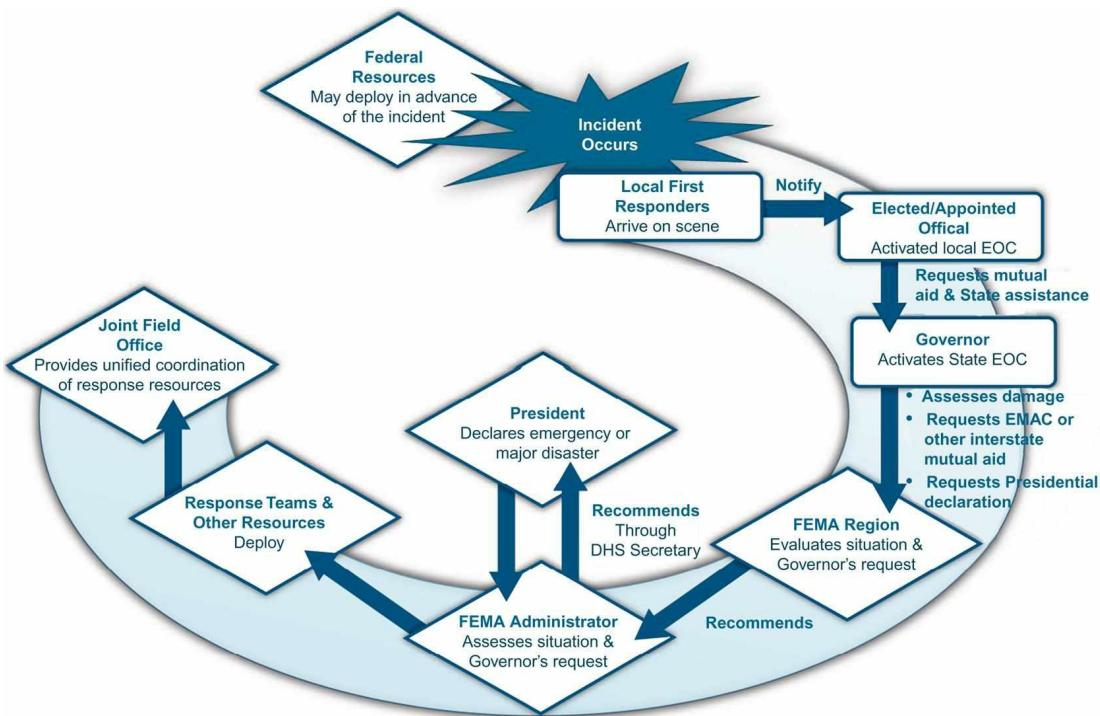


FIGURE 6.6 Stafford Act support to the states. Source: <http://bit.ly/2fAMrbt>.

The Presidential Disaster Declaration Process

Disaster declaration is a mechanism by which governments acknowledge that response resources have become overwhelmed. Through the declaration, a government is able to communicate that additional assistance is required and, likewise, requested, from higher levels of jurisdictional and organizational authority.

In the United States, a presidential disaster declaration is what makes available the range of resources available to the affected local and state governments as established through the Stafford Act. Although a formal declaration does not have to be signed for the federal government to respond, a state's governor must make a formal request for assistance and specify in the request the specific needs of the disaster area. In the presidential major disaster declaration process, federal, state, local, tribal, private sector, and nongovernmental organizations report threats, incidents, and potential incidents, using established communications and reporting channels. The Homeland Security Office of Operations Coordination and Planning receives threat and operational information regarding incidents or potential incidents and makes an initial determination to initiate the coordination of federal information-sharing and incident management activities. The decision to make a disaster declaration is completely at the discretion of the president. There are no set criteria to follow and no government regulations to guide which events are declared by the president and which events are not. FEMA has developed several factors it considers in making its recommendation to the president,

including individual property losses per capita, level of damage to existing community infrastructures, and insurance coverage. In the end, however, the decision to make the declaration is the president's alone.

A presidential disaster declaration can be made in as short a time as a few hours, as was the case in the 1994 Northridge earthquake and the 1995 Oklahoma City bombing (see the Oklahoma City Bombing Case Study below). Sometimes, however, it takes weeks for damages to be assessed and the capability of state and local jurisdictions to fund response and recovery efforts to be evaluated. If the president turns down the governor's request, the governor has the right to appeal and can be successful, especially if new damage data become available and are included in the appeal.

Hurricane Sandy FEMA After-Action Report

Executive Summary

{Hurricane} Sandy, the second-largest Atlantic storm on record, affected the East Coast from Florida to Maine, as well as states as far inland as West Virginia, Ohio, and Indiana. The storm made landfall in southern New Jersey on Oct. 29, 2012, battering the densely populated New York and New Jersey region with heavy rains, strong winds, and record storm surges. The storm's effects were extensive, leaving more than 8.5 million customers without power, causing widespread flooding throughout the region, and contributing to acute fuel shortages in parts of New York and New Jersey. The storm damaged or destroyed hundreds of thousands of homes, caused tens of billions of dollars in damages, and killed at least 162 people in the United States.

The Federal Emergency Management Agency (FEMA) coordinated a large-scale Federal response that contributed to the integrated, national effort to support affected states and communities. In the days before Sandy's landfall, FEMA worked closely with Whole Community partners—including all levels of government, private and nonprofit sectors, faith-based organizations, communities, and individuals—to prepare for the storm and anticipate survivor needs. The Agency pre-positioned commodities and assets, activated response centers, and deployed over 900 personnel ahead of Sandy's landfall. In the initial response to the storm, the Agency coordinated with its partners to provide Federal resources and to develop innovative solutions to address power restoration, transportation, fuel distribution, and housing needs. As recovery efforts began, FEMA continued to work with its partners to assist survivors and their communities. The Agency executed one of the largest deployments of personnel in its history, delivered over \$1.2 billion in housing assistance to more than 174,000 survivors, and obligated over \$800 million for debris removal and infrastructure restoration.

Despite these successes, the response to Sandy also revealed notable challenges in how FEMA coordinates with its Federal partners, supports state and local officials and disaster survivors, integrates with the Whole Community, and prepares and deploys its workforce. Difficulties with issuing

timely mission assignments, the implementation of incident management structures, and meeting survivor needs early in the response phase are examples of challenges that emerged during Sandy. Addressing these and other issues is a near-term priority for FEMA and its partners in order to improve response and recovery operations in future disasters. Ultimately, the Sandy experience demonstrated significant progress achieved in recent years, but also confirmed that larger-scale incidents will stress the Agency's capacity for effective response and recovery.

Strengths and areas for improvement

FEMA established the Sandy Analysis Team to review all aspects of the Agency's preparations for, immediate response to, and initial recovery from the storm. The Sandy Analysis Team analyzed a wide variety of data and supporting information from FEMA and its Whole Community partners. Based on this analysis, the Sandy Analysis Team identified strengths and areas for improvement organized across four overarching themes.

Theme 1: Ensuring unity of effort across the Federal response

In response to Sandy, FEMA coordinated a large-scale mobilization of Federal teams, supplies, and other assets both before and immediately after landfall. The magnitude of the disaster revealed several strengths and areas for improvement related to integrating and coordinating Federal operations.

Strengths and Areas for Improvement
<ul style="list-style-type: none">• Strength: The President expedited Federal disaster declarations• Strength: Using an online crisis management system to coordinate Federal response operations• Area for Improvement: Integrating Federal senior leader coordination and communications into response and recovery operations• Area for Improvement: Coordinating Emergency Support Functions (ESFs) and Recovery Support Functions (RSFs) to support disaster response and recovery• Area for Improvement: Refining the mission assignment process• Area for Improvement: Implementing incident management structures• Area for Improvement: Using planning and analysis to drive operational decision-making• Area for Improvement: Ensuring continuous improvement of disaster doctrine, policies, and plans

Theme 2: Being Survivor-Centric

Responding to and recovering from disasters is ultimately about meeting survivors' needs. In the wake of Sandy, FEMA established a large field presence of deployed personnel who innovated to reach more survivors and improve their experiences with the Agency. While these efforts eased the recovery process for many individuals, opportunities remain to better serve survivors' needs.

Strengths and Areas for Improvement

- **Strength:** Meeting survivor needs through innovation
- **Area for Improvement:** Meeting survivors' needs during initial interactions
- **Area for Improvement:** Ensuring survivors have equal access to services
- **Area for Improvement:** Reducing the complexity of the Public Assistance program

Theme 3: Fostering unity of effort across the Whole Community

FEMA's response and recovery operations are most effective when implemented in concert with Whole Community activities. During Sandy, FEMA demonstrated progress in integrating its response and recovery efforts with the Whole Community. As the Agency prepares for the full range of potential disasters, FEMA recognizes that it must continue to improve efforts to work with community members before incidents occur and integrate Whole Community partners during incident response and recovery.

Strengths and Areas for Improvement

- **Strength:** Integrating response and recovery efforts with nongovernmental partners
- **Area for Improvement:** Coordinating among states, localities, and tribes

Theme 4: Developing an agile, professional emergency management workforce

FEMA completed one of the largest personnel deployments in its history, at a time when major efforts to transform the disaster workforce were still under way. To meet Sandy staffing needs, FEMA leveraged elements of this incomplete transformation—including new sources of personnel that were established to meet force structure requirements. The Agency also tested a new credentialing system for positions within that force structure. Given that the workforce transformation is incomplete, Sandy revealed challenges in FEMA's ability to deploy sufficient numbers of credentialed personnel for a large incident. The response also illustrated that large-scale incidents create challenges for the Agency in areas such as lodging, travel, and information technology when it is supporting a large deployed workforce. Further, large deployments create challenges for maintaining steady-state functions.

Strengths and Areas for Improvement

- **Strength:** Completing one of the largest and most diverse personnel deployments in FEMA history
- **Area for Improvement:** Ensuring a qualified disaster workforce
- **Area for Improvement:** Mobilizing the FEMA workforce for disaster response
- **Area for Improvement:** Supporting deployed personnel
- **Area for Improvement:** Ensuring continuity of operations

Source: FEMA. 2013. Hurricane Sandy FEMA After Action Report. July 1, 2013. <http://bit.ly/2fAMFzg>.

Presidential declarations are routinely sought for such events as large floods, hurricanes, earthquakes, and big tornadoes. In recent years, governors have become more inventive and have requested presidential disaster declarations for snow removal, drought, the West Nile virus, and economic losses caused by failing industries such as the Northwest salmon spawning decline. Between 1979 and Jul. 2016 there were 1827 presidential major disaster declarations, emergency declarations, and Fire Management Assistance Declarations, averaging 44 total declarations per year. As an example of disaster declaration activity in a single year, in 2015 there were 44 major disaster declarations, 2 emergency declarations, and 33 Fire Management Assistance Declarations in 28 states, 2 tribal areas and Guam and the Commonwealth of the Northern Mariana Islands.

As was previously mentioned, it is a Stafford Act requirement that all requests for a presidential major disaster declaration be made by the governor of the affected state (which includes territories, the District of Columbia, and on tribal lands.) The governor's request is made through one of the ten regional FEMA offices. State and federal officials conduct a preliminary damage assessment (PDA) to estimate the extent of the disaster and its impact on individuals and public facilities. This information is included in the governor's request to show that the disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the local governments and that federal assistance is necessary. Normally, the PDA is completed prior to the submission of the governor's request. However, when an obviously severe or catastrophic event occurs, the governor's request may be submitted prior to the PDA. Nonetheless, the governor must still make the request.

As part of the request, the governor must take appropriate action under state law and direct execution of the state's emergency plan. The governor furnishes information on the nature and amount of state and local resources that have been or will be committed to alleviating the results of the disaster, provides an estimate of the amount and severity of damage and the impact on the private and public sector, and provides an estimate of the type and amount of assistance needed under the Stafford Act. In addition, the governor certifies that, for the current disaster, state and local government obligations and expenditures (of which state commitments must be a significant proportion)

will comply with all applicable cost-sharing requirements.

Based on the governor's request, the president may declare that a major disaster or emergency exists, thus activating an array of federal programs to assist in the response and recovery effort. Not all programs, however, are activated for every disaster. The determination of which programs are activated is based on the needs found during the damage assessment and any subsequent information that may be discovered. Some declarations will provide only individual assistance or only public assistance. Hazard mitigation opportunities are assessed in most situations.

The Preliminary Damage Assessment (PDA)

The preliminary damage assessment team is comprised of personnel from FEMA, the state's emergency management agency, county and local officials, and the US Small Business Administration (SBA). The team's work begins with reviewing the types of damage or emergency costs incurred by the units of government, and the impact to critical facilities, such as public utilities, hospitals, schools, and fire and police departments. They will also look at the effect on individuals and businesses, including the number damaged, the number of people displaced, and the threat to health and safety caused by the storm event. Additional data from the Red Cross or other local voluntary agencies may also be reviewed. During the assessment the team will collect estimates of the expenses and damages.

The information obtained through the PDA is used by the governor to support a declaration request—showing the cost of response efforts, such as emergency personnel overtime, other emergency services, and damage to citizens, is beyond state and local recovery capabilities. The information gathered during the assessment will help the governor certify that the damage exceeds state and local resources.

FEMA Declaration Criteria

Federal disaster law restricts the use of arithmetical formulas or other objective standards as the sole basis for determining the need for federal supplemental aid through a disaster or emergency declaration. As a result, FEMA assesses a number of factors to determine the severity, magnitude, and impact of the adverse event. In evaluating a governor's request for a major disaster declaration, a number of primary factors, along with other relevant information, are considered in developing the recommendation that is ultimately provided to the president for use in considering whether or not the state or other jurisdictional entities merit a declaration and the assistance that comes with it. Primary factors considered include:

- Amount and type of damage (number of homes destroyed or with major damage)
- Impact on the infrastructure of affected areas or critical facilities
- Imminent threats to public health and safety

- Impacts to essential government services and functions
- Unique capability of the federal government
- Dispersion or concentration of damage
- Level of insurance coverage in place for homeowners and public facilities
- Assistance available from other sources (federal, state, local, and voluntary organizations)
- State and local resource commitments from previous, undeclared events
- Frequency of disaster events over recent time period

The very nature of disasters—their unique circumstances, the unexpected timing, and varied impacts—precludes a complete listing of factors considered when evaluating disaster declaration requests. However, the above lists the most primary considerations (FEMA, 2013).

Critical Thinking

Should there be stricter or more direct guidelines about what events the president can declare a disaster? Why or why not?

The National Response Framework (NRF)

In 1992 FEMA created the Federal Response Plan (FRP) to provide for the first time a coordinated federal government-wide emergency management structure. FEMA defined the FRP as a signed agreement among 27 federal departments and agencies, including the American Red Cross, that performed the following: Provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of state and local governments overwhelmed by a major disaster or emergency, supports implementation of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (42 U.S.C. 5121, et seq.), as well as individual agency statutory authorities, and supplements other federal emergency operations plans developed to address specific hazards.

The fundamental goal of the FRP was to maximize available federal resources in support of response and recovery actions taken by state and local emergency officials.

Following the absorption of FEMA into the Department of Homeland Security on Feb. 18, 2003, President Bush signed Presidential Directive 5 (HSPD-5) "to enhance the ability of the United States to manage domestic incidents by establishing a single, comprehensive national incident management system." This action authorized the design and development of a National Response Plan (NRP) to "align federal coordination structures, capabilities, and resources into a unified, all-discipline, and all-hazards approach to domestic incident management."

The NRP was designed according to the template of the National Incident Management System (NIMS; released Mar. 1, 2004) to ensure that a consistent doctrinal framework existed for the management of incidents at all jurisdictional levels, regardless of the incident cause, size, or complexity. NIMS was created to integrate effective practices in emergency preparedness and response into a comprehensive national framework for incident management. NIMS enables responders at all levels to work together more effectively and efficiently to manage domestic incidents no matter what the cause, size, or complexity, including catastrophic acts of terrorism and disasters.

In Jan. 2008, DHS published the National Response Framework (NRF) that replaced the National Response Plan (NRP) and currently serves as the guide for response to major disaster events in the United States. According to FEMA:

The National Response Framework (NRF) presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies—from the smallest incident to the largest catastrophe. The Framework defines the key principles, roles, and structures that organize the way we respond as a nation. It describes how communities, tribes, states, the federal government, and private sector and nongovernmental partners apply these principles for a coordinated, effective national response. The national response

framework is always in effect, and elements can be implemented at any level at any time. (FEMA, <http://bit.ly/2ejZDeL>.)

In May of 2013 an updated version of the NRF was released in order to incorporate the Whole Community concept, alter the coordination function contained in ESF#5 (changed from Emergency Management to Planning and Information), and to make other minor structural changes.

According to FEMA, the Jun. 2016 update of the NRF included, “critical edits in the refreshed Nation Preparedness Goal, including lessons learned from real world events and continuing implementation of the National Preparedness System. These edits include:

- The addition of one new core capability—Fire Management and Suppression
 - Three revised core capability titles:
 - Logistics and Supply Chain Management
 - On-scene Security, Protection, and Law Enforcement
 - Public Health, Healthcare, and Emergency Medical Services
 - Three revised core capability definitions:
 - Environmental Response/Health and Safety
 - Fatality Management Services
 - Logistics and Supply Chain Management
- Other edits include:
- Additional language on science and technology investments to support the development of core capabilities to respond to evolving hazards.” (FEMA, 2016, <http://bit.ly/2fhQ16u>)

The NRF was developed according to five key principles that form the basis of its response doctrine. These include:

- Engaged partnership
- Tiered response
- Scalable, flexible, and adaptable operational capabilities
- Unity of effort through unified command
- Readiness to act

The NRF base document is comprised of the following six components:

- Roles and responsibilities
- Core capabilities
- Coordination structures and integration
- Relationship to other mission areas
- Operational planning
- Supporting resources

The NRF identifies the key players and their roles in the NRF.

The National Incident Management System (NIMS)

In the aftermath of Hurricane Katrina, President George W. Bush directed the Department of Homeland Security, through Homeland Security Presidential Directive 5 (HSPD-5), to develop a national-level incident management system.

This action was taken in the aftermath of the Sep. 11th attacks when poor coordination between disparate agencies was noted by the 9/11 Committee. NIMS was developed as an outgrowth of ICS that allows for increased interorganizational coordination that is not necessarily addressed under standard ICS structures. The system is designed to be a more comprehensive incident management system than ICS because it goes beyond the field-level incident command and control and addresses all phases of emergency management, as well as all stakeholders (including the NGO and private sectors). It does not, however, replace ICS.

The federal government promoted NIMS adoption at the local and state levels by making it a requirement for many federal grant programs. As a result, it is recognized by response agencies in almost all US communities, and oftentimes by other entities involved in response, such as hospitals and schools. However, its use is optional among the nongovernmental organizations so the degree to which it has been adopted and understood by these organizations remains undetermined.

NIMS, coupled with ICS and the Multi-agency Coordination System (MACS), represent a comprehensive federal strategy to improve the coordination of different agencies in major disaster events.

The official definition of NIMS, as detailed in the NIMS Guide dated Dec. 2008, is as follows:

The National Incident Management System (NIMS) provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment. NIMS works hand in hand with the National Response Framework (NRF). NIMS provides the template for the management of incidents, while the NRF provides the structure and mechanisms for national-level policy for incident management. (FEMA, 2008)

ICS, which manages incident command and control, is considered a critical component of NIMS, which is a more comprehensive system that establishes a national approach to the management of emergencies and disasters. NIMS exists in order to provide a methodology through which human and equipment resources, supplies, and finances may be coordinated for a more effective response.

While NIMS does not establish command and control procedures or protocols, it should not be thought of as a mere resource allocation plan. Rather, NIMS represents a core set of doctrines, concepts, principles, terminology, and organizational processes that together exist to provide a more effective, efficient, and collaborative management of the incident.

FEMA presents the following overview of NIMS in terms of what the system is, and what it is not (FEMA, 2009):

What NIMS is:

- A comprehensive, nationwide, systematic approach to incident management, including the Incident Command System, Multi-agency Coordination Systems, and Public Information
 - A set of preparedness concepts and principles for all hazards
 - Essential principles for a common operating picture and interoperability of communications and information management
 - Standardized resource management procedures that enable coordination among different jurisdictions or organizations
 - Scalable, so it may be used for all incidents (from day-to-day to large-scale)
 - A dynamic system that promotes ongoing management and maintenance
- What NIMS is NOT:
- A response plan
 - Only used during large-scale incidents
 - A communications plan
 - Only applicable to certain emergency management/incident response personnel
 - On the Incident Command System or an organizational chart
 - A static system

Source: FEMA. <http://bit.ly/2ejZDeL>.

National Response Framework Key Players

Local Governments

Local governments (counties, cities, or towns) respond to emergencies daily using their own resources. They also rely on mutual aid and assistance agreements with neighboring jurisdictions when they need additional resources. The National Incident Management System (NIMS) provides information on mutual aid and assistance agreements. When local jurisdictions cannot meet incident response resource needs with their own resources or with help available from other local jurisdictions, they may ask the state for assistance.

Tribal Governments

Tribal governments respond to the same range of emergencies and disasters that other jurisdictions face. They may require assistance from neighboring jurisdictions under mutual aid and assistance agreements and may provide assistance as well. The United States has a trust relationship with American Indian tribes and recognizes their right to self-government. As such, tribal governments are responsible for coordinating resources to address actual or potential incidents. When local resources are not adequate, tribal leaders seek assistance from states or the federal government.

For certain types of federal assistance, tribal governments work with the state, but as sovereign entities, they can also elect to deal directly with the federal government for other types of assistance. To obtain federal assistance via the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), the state governor must request a presidential declaration on behalf of a tribe.

State Governments

The state helps local governments if they need assistance. States have significant resources of their own, including emergency management and homeland security agencies, state police, health agencies, transportation agencies, incident management teams, specialized teams, and the National Guard.

If additional resources are required, the state may request assistance from other states through interstate mutual aid and assistance agreements such as the Emergency Management Assistance Compact (EMAC). Administered by the National Emergency Management Association, EMAC is a congressionally ratified organization that provides form and structure to the interstate mutual aid and assistance process.

If an incident is beyond the local and state capabilities, the governor can seek federal assistance. The state will collaborate with the impacted communities and the federal government to provide the help needed.

The Federal Government

The federal government maintains a wide array of capabilities and resources that can assist state governments in responding to incidents. Federal departments and agencies provide this assistance using processes outlined later in this document. In addition, federal departments and agencies may also request and receive help from other federal departments and agencies.

Nongovernmental Organizations

Nongovernmental and voluntary organizations are essential partners in responding to incidents. Working through emergency operations centers and other structures, nongovernmental and voluntary organizations assist local, tribal, state, and federal governments in providing shelter, emergency food supplies, counseling services, and other vital support services to support response and promote the recovery of disaster victims. These groups often provide specialized services that help individuals with special needs, including those with disabilities.

To engage these key partners most effectively, local, tribal, state, and federal governments coordinate with voluntary agencies, existing Voluntary Organizations Active in Disaster (VOADs), community and faith-based organizations, and other entities to develop plans to manage volunteer services and donated goods, establish appropriate roles and responsibilities, and train and exercise plans and procedures before an incident occurs.

The Private Sector

Forming the foundation for the health of the nation's economy, the private sector is a key partner in local, tribal, state, and federal incident management activities. The private sector is responsible for most of the critical infrastructure and key resources in the nation and thus may require assistance in the wake of a disaster or emergency. They also provide goods and services critical to the response and recovery process, either on a paid basis or through donations.

Source: FEMA. <http://bit.ly/2ejZDeL>.

Federal Assistance in Disaster Response

Federal disaster assistance can come from a number of initiating factors, but is most commonly associated with a presidential declaration and its statutory authority, the Stafford Act. Federal disaster assistance may be provided to state, tribal, and local jurisdictions, to other federal departments and agencies, and to private and nongovernmental sector organizations, in a number of different ways through various mechanisms and authorities all dictated according to eligibility.

Federal disaster assistance does not always require coordination by the Federal Emergency Management Agency, and may be provided without a presidential major disaster or emergency declaration. In such cases, the coordination of federal assistance may be initiated and led by other federal departments and agencies consistent with their authorities, such as with a public health emergency declared and managed by the Department of Health and Human Services, or an Agricultural Emergency Declaration as declared and managed by the Department of Agriculture (see *Non-Stafford Act Federal Support to State and Local Jurisdictions* below).

The vast majority of federally supported disaster events that are the result of the major natural and technological hazards described in this text, and which fall squarely under the purview of the local emergency manager, are typically those that require a presidential disaster declaration and which likewise are within the bounds of the Stafford Act. Federal support for such events is structured according to the National Response Framework and coordinated by the secretary of Homeland Security through FEMA.

Federal support to states and local jurisdictions under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (The Stafford Act) occurs about 44 times each year on average (in addition to major emergency and fire management assistance declarations which provide more limited assistance). Before the declaration request is made, the governor must first activate their state's emergency operations plan and procedures, and ensure that all appropriate state and local emergency response actions have been initiated within the limits of their capabilities. The affected area must be surveyed to determine the extent of private and public damage, and joint preliminary damage assessments must be conducted with FEMA officials to estimate the types and extent of federal disaster assistance that will be required.

Ordinarily, only the governor can initiate a request for a presidential emergency or major disaster declaration. In extraordinary circumstances, the president may unilaterally make such a declaration. The governor's request is made through the FEMA regional administrator and based on a finding that the disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and affected local governments and that federal assistance is necessary.

- The governor's request includes the following:
- Information on the extent and nature of state resources that have been or will

be used to address the consequences of the disaster

- A certification by the governor that state and local governments will assume all applicable nonfederal costs required by the Stafford Act
- An estimate of the types and amounts of supplementary federal assistance required
- Designation of a State Coordinating Officer who oversees the management of all state operations relative to the disaster (and interfaces with the Federal Coordinating Officer in the Joint Field Office).

The FEMA regional administrator evaluates the damage and requirements for federal assistance and makes a recommendation to the FEMA administrator, who, acting through the secretary of Homeland Security, then recommends a course of action to the president. The governor, appropriate members of Congress, and federal departments and agencies are immediately notified of a presidential declaration.

Non–Stafford Act Federal Support to State and Local Jurisdictions

While the Stafford Act is the most familiar mechanism by which the federal government may provide support to state, tribal, and local governments, it is not the only one. Often, federal assistance does not require coordination by DHS and can be provided without a presidential major disaster or emergency declaration.

In these instances, federal departments and agencies provide assistance to states, as well as directly to tribes and local jurisdictions, consistent with their own authorities. For example, under the Comprehensive Environmental Response, Compensation, and Liability Act, local and tribal governments can request assistance directly from the Environmental Protection Agency and/or the US Coast Guard.

This support is typically coordinated by the federal agency that has primary jurisdiction rather than by DHS. The secretary of Homeland Security may monitor such incidents and may, as requested, activate National Response Framework mechanisms to support federal departments and agencies without assuming overall leadership for the incident.

Organizing Support—The Emergency Support Function (ESF)

To best organize and coordinate the different categories of emergency support that is required in response, and the myriad agencies tasked to provide such support, Emergency Support Function (ESF) annexes are developed. The ESF format organizes the operational aspects of an emergency plan or framework according to the most common categories of anticipated support, presented in a manner that accommodates the nature and preferences of the agencies for which the ESFs pertain. The ESF format is appropriate for larger-scale events because it accounts for the fact that multiple agencies and individuals who perform similar functions must coordinate their actions and resources.

Furthermore, it accounts for the fact that agencies and individuals may perform tasks and actions that fall into several different or all areas of support. By grouping response activities according to key functional areas, it becomes much easier to understand what individuals, groups, and resources will need to work in unison to deliver a key area of support to the affected population. For instance, ESF#6 of the NRF (Mass Care and Emergency Assistance) describes the various actions and activities that must be performed in order to ensure that the population has food, water, shelter, and psychosocial support, among other things. To provide these goods and services, there must be a concerted and coordinated effort on the part of the responsible government, nonprofit, private sector, and other stakeholders. This involves preparedness actions (such as the identification of viable shelters, for instance, or the training of shelter managers), resource allocations (such as the identification of providers of food, cots, blankets, and hygiene kits), assessment, reporting, and more. There are various legal and aspects that must be addressed, including the financial and liability concerns of shelter location owners, and the authority of officials to open those facilities. Tasks will have to be assigned, and standard protocols and operational policies will need to be created (and trained and exercised). This format does not change from hazard to hazard, or ESF to ESF. Emergency Support Functions allow for a limited and focused response, which can be scaled up or down depending upon the needs of the incident by simply activating some ESFs but not others.

The federal government and most state and local governments utilize the ESF format in their emergency plans. The same is true to a growing extent in the nongovernmental (private and nonprofit) sectors as well. While there is some standardization for which functions correspond to which ESF number, the needs of the jurisdiction served by the plan dictate what functions are used and there is no requirement for them to follow suit with what exists in the NRF. The ESF format gained momentum in the 1980s after FEMA's release of the Federal Response Plan (FRP). Many state and local agencies recognized not only the value of such a format, but saw that by developing plans to mirror those of state and federal agencies, coordination between agencies during major disasters

would be easier. Today, most agencies continue to use the ESF format and in many cases have expanded upon the 14 ESFs included in the NRF to address concerns that are of special interest to their state or local jurisdiction (note that the NRF includes 15 ESFs, but ESF #14 (Long-Term Community Recovery) has been superseded by the National Disaster Recovery Framework and is therefore no longer utilized). The Tuscaloosa County, AL Emergency Operations Plan, for example, includes 18 ESFs, one of which is 'Animal Care'.

During a response, ESFs are a critical mechanism to coordinate functional capabilities and resources provided by federal departments and agencies, along with certain private sector and nongovernmental organizations. ESFs may be selectively activated for both Stafford Act and non–Stafford Act incidents where federal departments or agencies request DHS assistance or under other circumstances as defined in Homeland Security Presidential Directive 5 (HSPD-5). Not all incidents result in the activation of ESFs.

ESFs may be activated to support headquarters, regional, and/or field activities (Fig. 6.7). The Incident Command System provides for the flexibility to assign ESF and other stakeholder resources according to their capabilities, tasking, and requirements to augment and support the other sections of the Joint Field Office (JFO)/Regional Response Coordination Center (RRCC) or National Response Coordination Center (NRCC) in order to respond to incidents in a more collaborative and crosscutting manner.



FIGURE 6.7 Princess Anne, Maryland, Nov. 4, 2012—(from left) John Reginaldi, regional administrator with the Maryland Emergency Management Agency, Butch Loper, public assistance with the Mississippi Emergency Management Agency, and John Albert Evans, department director of the Hancock County Emergency Management Agency, at the EOC in the Somerset

County Office Complex in Princess Anne, Maryland, as they follow areas affected by Hurricane Sandy. Photo by Frank Niemeir/FEMA.

While ESFs are typically assigned to a specific section at the NRCC or in the JFO/RRCC for management purposes, resources may be assigned anywhere within the unified coordination structure. Regardless of the section in which an ESF may reside, that entity works in conjunction with other JFO sections to ensure that appropriate planning and execution of missions occur. For example, if a state requests assistance with a mass evacuation, the JFO would request personnel from ESF #1 (transportation), ESF #6 (mass care, emergency assistance, housing, and human services), and ESF #8 (public health and medical services). These would then be integrated into a single branch or group within the operations section to ensure effective coordination of evacuation services.

ESF Member Roles and Responsibilities

Each ESF Annex identifies the coordinator and the primary and support agencies pertinent to the ESF. Several ESFs incorporate multiple components, with primary agencies designated for each component to ensure seamless integration of and transition between preparedness, response, and recovery activities.

- **ESF Coordinator.** The ESF coordinator is the entity with management oversight for that particular ESF. The coordinator has ongoing responsibilities throughout the preparedness, response, and recovery phases of incident management. The role of the ESF coordinator is carried out through a “unified command” approach as agreed upon collectively by the designated primary agencies and, as appropriate, support agencies.
- **ESF Primary Agency(ies).** An ESF primary agency is a federal agency with significant authorities, roles, resources, or capabilities for a particular function within an ESF. ESFs may have multiple primary agencies, and the specific responsibilities of those agencies are articulated within the relevant ESF Annex. A federal agency designated as an ESF primary agency serves as a federal executive agent under the federal coordinating officer (or federal resource coordinator for non-Stafford Act incidents) to accomplish the ESF mission.
- **ESF Support Agencies.** Support agencies are those entities with specific capabilities or resources that support the primary agency(ies) in executing the mission of the ESF.
- **ESF Leaders Group (ESFLG).** Each ESF is included in a Framework-wide ESF Leaders Group (ESFLG) staffed by representatives from each of the federal departments and agencies designated as coordinators for ESFs or coordinating agencies for other NRF annexes. The ESFLG, which is led by FEMA, provides a forum for members to jointly address topics such as policies, preparedness, and training.

There is a common organizational format to the ESFs within the NRF, and

most state and local plans likewise use these components. They include a purpose statement, a description of capabilities, an overview of the concept of operations within the ESF, and the designation of ESF members identifying the ESF coordinator and primary and support agencies.

Emergency Support Function #5—Information And Planning Annex

Purpose

Emergency Support Function (ESF) #5—Information and Planning collects, analyzes, processes, and disseminates information about a potential or actual incident and conducts planning activities to facilitate the overall activities in providing assistance to the whole community.

Scope

ESF #5 coordinates the development of overall incident situational awareness and the development of Federal plans to manage and support incident activities. Departments and agencies participate in the planning processes coordinated by the planning entity at each incident command or multiagency coordination center.

ESF #5 activities include functions that are critical to support and facilitate multiagency planning and coordination for operations involving incidents requiring Federal coordination. This includes crisis and incident action planning; information collection, analysis, and management; and other support as required.

ESF #5 is organized in accordance with the National Incident Management System (NIMS). ESF #5 supports the general staff functions contained in the NIMS for all the Federal multiagency coordination centers and incident operations (e.g., National Response Coordination Center, Regional Response Coordination Centers, Joint Field Offices).

Relationship to Whole Community

This section describes how ESF #5 relates to other elements of the whole community. Basic concepts that apply to all members of the whole community include:

- Effective incident response activities rely on information and planning systems that provide a common operating picture to all members of the whole community engaged in a response
- Information needs should be defined by the jurisdiction/organization. These needs are often met at the local, state, tribal, territorial, insular area, and Federal levels, in concert with nongovernmental organizations (NGOs) and the private sector, and primarily through preparedness organizations
- Procedures and protocols for the release of warnings, incident notifications, public communications, and other critical information are disseminated through a defined combination of networks used by emergency operations centers. Notifications are made to the appropriate jurisdictional levels and to NGOs and the private sector through defined mechanisms specified in

- emergency operations plans and incident action plans
- Appropriate auxiliary aids and services are used to effectively communicate information, warnings, notifications, and other critical information for individuals with disabilities and others with access and functional needs.

Local, State, Tribal, Territorial, Insular Area, and Governments

Local, state, tribal, territorial, insular area, and governments government elements engage in incident planning and collaborate with Federal planning elements as part of unified response efforts.

Private Sector/Nongovernmental Organizations

The private sector and NGOs are important sources of critical incident information. Many members of the private sector and NGOs with a role in response participate in planning efforts, as well as conduct their own.

Source: FEMA, <http://bit.ly/2ejRxmy>

The NRF currently has 15 ESFs, 14 of which are active. These include:

ESF #1—Transportation

ESF #2—Communications

ESF #3—Public Works and Engineering

ESF #4—Firefighting

ESF #5—Information and Planning

ESF #6—Mass Care, Emergency Assistance, Temporary Housing, and Human Services

ESF #7—Logistics

ESF #8—Public Health and Medical Services

ESF #9—Search and Rescue

ESF #10—Oil and Hazardous Materials Response

ESF #11—Agriculture and Natural Resources

ESF #12—Energy

ESF #13—Public Safety and Security

ESF #14—Long-Term Community Recovery (superseded by the National Disaster Recovery Framework—see *The National Disaster Recovery Framework* in [Chapter 7](#), The Disciplines of Emergency Management: Recovery)

ESF #15—External Affairs

The NRF also includes the following support annexes that “describe how federal departments and agencies; state, tribal, and local entities; the private sector; volunteer organizations; and NGOs coordinate and execute the common functional processes and administrative requirements necessary to ensure efficient and effective incident management. During an incident, numerous procedures and administrative functions are required to support incident management” (NRF, <http://bit.ly/2925NA3>):

- Critical Infrastructure and Key Resources
- Financial Management
- International Coordination
- Private Sector Coordination
- Public Affairs
- Tribal Relations

- Volunteer and Donations Management
- Worker Safety and Health

NRF Roles and Responsibilities

Several key officials at the federal, state, and local levels are instrumental to a response involving federal resources as dictated in the NRF. Each of these individuals and descriptions of the NRF roles and responsibilities include:

The Governor

The governor is responsible for ensuring the public safety and welfare of state residents. The governor coordinates state resources, provides strategic guidance in disaster response, supports local governments as needed, and coordinates assistance with other states and the federal government. A governor is also responsible for the following:

- In accordance with state law, may make, amend, or suspend certain orders or regulations associated with response.
- Communicates to the public, in an accessible manner (e.g., effective communications to address all members of the whole community), and helps people, businesses, and organizations cope with the consequences of any type of incident.
- Coordinates with tribal governments within the state.
- Commands the state military forces (National Guard personnel not in federal service and state militias).
- Coordinates assistance from other states through interstate mutual aid and assistance agreements, such as the Emergency Management Assistance Compact (EMAC).
- Requests federal assistance including, if appropriate, a Stafford Act declaration of an emergency or major disaster.

Local Chief Elected or Appointed Official

Jurisdictional chief executives are responsible for the public safety and welfare of their constituents. They must maintain a clear understanding of their emergency management roles and responsibilities and how to apply the response core capabilities as they may need to make decisions regarding resources and operations during an incident. Lives may depend on their decisions. Elected and appointed officials also routinely shape or modify laws, policies, and budgets to aid preparedness efforts and improve emergency management and response capabilities. The local chief executive's response duties may include:

- Suspending local laws and ordinances, such as to establish a curfew, direct evacuations, and, in coordination with the local health authority, ordering a quarantine (dependent on state and local law).
- Providing leadership and playing a key role in communicating to the public, and in helping people, businesses, and organizations cope with the

consequences of any type of domestic incident within the jurisdiction.

- Negotiating and entering into mutual aid agreements with other jurisdictions to facilitate resource-sharing. Requesting state and, if necessary, federal assistance through the governor of the state when the jurisdiction's capabilities have been exceeded or exhausted.

Tribal/Territorial/Insular Area Leader

The tribal/territorial/insular area leader is responsible for the public safety and welfare of the people within their jurisdiction. Other responsibilities might include:

- Coordinating tribal resources to address the full spectrum of actions to prevent, prepare for, respond to, and recover from incidents involving all hazards, including terrorism, natural disasters, accidents, and other contingencies.
- Suspending tribal laws and ordinances in extraordinary circumstances, such as to establish a curfew, direct evacuations, and order a quarantine.
- Providing leadership and playing a key role in communicating to the jurisdictional area, and in helping people, businesses, and organizations cope with the consequences of any type of domestic incident within the jurisdiction.
- Negotiating and entering into mutual aid agreements with other jurisdictions to facilitate resource-sharing.
- Requesting state (if appropriate) and federal assistance through the governor of the state or through the FEMA regional office when the capabilities under the authority of the leader have been exceeded or exhausted.

Secretary of Homeland Security

Pursuant to HSPD-5, the secretary of Homeland Security does the following:

- Is responsible for coordinating federal operations within the United States to prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies.
- Serves as the "principal federal official" for domestic incident management. The secretary is also responsible for coordinating federal resources utilized in response to or recovery from terrorist attacks, major disasters, or other emergencies if and when any of the following four conditions applies:
 - A federal department or agency acting under its own authority has requested DHS assistance.
 - The resources of state and local authorities are overwhelmed and federal assistance has been requested.
 - More than one federal department or agency has become substantially involved in responding to the incident.
 - The secretary has been directed to assume incident management responsibilities by the president.

FEMA Administrator

The FEMA Administrator is the principal advisor to the president, the secretary of Homeland Security, and the Homeland Security Council regarding emergency management. The FEMA administrator's duties include assisting the president, through the secretary, in carrying out the Stafford Act, operation of the National Response Coordination Center (NRCC), the effective support of all ESFs, and more generally, preparation for, protection against, response to, and recovery from all-hazards incidents.

Attorney General

The attorney general is the chief law enforcement officer in the United States. In accordance with HSPD-5 and other relevant statutes and directives, the attorney general has lead responsibility for criminal investigations of terrorist acts or terrorist threats:

- By individuals or groups inside the United States
- Directed at US citizens or institutions abroad

Generally acting through the FBI, the attorney general, in cooperation with other federal departments and agencies engaged in activities to protect national security, coordinates the activities of the other members of the law enforcement community.

Secretary of Defense

Department of Defense (DOD) resources are committed in a disaster only after approval by the secretary of defense or at the direction of the president (there are other federal authorities that enable DOD officials to respond domestically when needed to save or sustain lives and to protect property in dire situations). When DOD resources are authorized to support civil authorities, command of those forces remains with the secretary of defense. DOD elements in the incident area coordinate with the National Guard forces that are under the governor's command, as well as with response organizations from all government levels as needed.

Secretary of State

Domestic disaster incidents can and have had international and diplomatic implications that call for coordination and consultation with foreign governments and international organizations. This is most common when foreign citizens residing in the United States or visiting the area where the disaster occurred are impacted. The secretary of state is responsible for all communication and coordination between the US government and other nations regarding the response to a domestic crisis. The department of state also coordinates international offers of assistance and formally accepts or declines these offers on behalf of the US government based on needs conveyed by federal departments and agencies as stated in the International Coordination Support Annex. Some types of international assistance are pre-identified, and bilateral agreements are already established. For example, the USDA/Forest Service and department of the interior have joint bilateral agreements with

several countries for wildland firefighting support.

Non-Governmental Organizations (NGOs)

NGOs collaborate with first responders, governments at all levels, and other agencies and organizations providing relief services to sustain life, reduce physical and emotional distress, and promote recovery of disaster victims when assistance is not available from other sources.

Private Sector

DHS and NRF primary and support agencies coordinate with the private sector to effectively share information, form courses of action, and incorporate available resources to prevent, prepare for, respond to, and recover from disasters. The roles, responsibilities, and participation of the private sector during presidentially declared disasters vary based on the nature of the organization and the type and impact of the incident. Private sector organizations may be involved as:

- *An impacted organization or infrastructure.* Private sector organizations may be affected by direct or indirect consequences of the incident. Examples of privately owned infrastructure include transportation, telecommunications, private utilities, financial institutions, and hospitals.
- *A response resource.* Private sector organizations may provide response resources (donated or compensated) during an incident, including specialized teams, equipment, and advanced technologies.
- *A regulated and/or responsible party.* Owners/operators of certain regulated facilities or hazardous operations may bear responsibilities under the law for preparing for and preventing incidents from occurring, and responding to an incident once it occurs. For example, federal regulations require owners/operators of nuclear facilities that are regulated by the Nuclear Regulatory Commission to maintain emergency (incident) preparedness plans, procedures, and facilities and to perform assessments, prompt notifications, and training for a response to an incident.
- *Partner with federal/state/local emergency organizations.* Private sector organizations may serve as an active partner in local and state emergency preparedness and response organizations and activities.

An example of how FEMA is working to better coordinate response actions with the private sector is the National Business Emergency Operations Center (NBEOC). The NBEOC serves as a virtual emergency operations center that facilitates coordination and collaboration between government and private sector response activities in a disaster. See the following NBEOC sidebar for more information.

National Business Emergency Operations Center

In a crisis, close collaboration between the Federal Emergency Management

Agency (FEMA) and the private sector is critical to protecting citizens and rebuilding communities. The National Business Emergency Operation Center (NBEOC) is a groundbreaking new virtual organization that serves as FEMA's clearinghouse for two-way information sharing between public and private sector stakeholders in preparing for, responding to, and recovering from disasters. The goal of the NBEOC is to take FEMA's current Private Sector Representative (PSR)—a private sector emergency manager serving a 90-day rotation in the National Response Coordination Center (NRCC)—role during NRCC activation and provide it greater structure and a deeper bench.

NBEOC Design

- Facilitate a public-private sector exchange of information about needs and capabilities
- Support the ability of state, local, and tribal governments to recover from disasters by connecting them with FEMA's regional private sector liaisons and the NBEOC's national network of resources
- Foster cooperative and mutually-supportive relationships that eliminate duplicative partnership development efforts
- Assist Regional and Joint Field Office (JFO) partners in identifying where support is available or needed to restore business operations to the affected areas
- Engage key stakeholders who bring resources, capabilities, and expertise to bear during disaster response and recovery efforts to determine impacts on their ability to provide services to the public
- Improve situational awareness across the affected areas

NBEOC Membership and Structure

Participation in the NBEOC is voluntary and open to all members of the private sector, including large and small businesses, associations, universities, think tanks, and non-profits. Organizations interested in joining or sharing ideas can contact FEMA—PSR@dhs.gov.

All participation and coordination is virtual—via conference calls, email, and web platforms—with only NBEOC leadership serving in a physical capacity at FEMA Headquarters. This is reflected in the NBEOC's structure:

- The Director of FEMA's Private Sector Division, Office of External Affairs, has overall responsibility for the NBEOC
- FEMA's current Private Sector Representative serves as the NBEOC Director, supporting the Private Sector Division Director and coordinating the collaboration of the members
- Members are organized into groups by their affiliations, including federal partners, private sector organizations and associations, PSR program alumni, private sector functional areas, and regional/state/local organizations
- As the NBEOC grows, its structure will remain fluid, evolving to reflect feedback from participants and audience members as well as lessons learned from events and exercises

Source: FEMA, 2016, <http://bit.ly/2e7ceXy>

Citizen Involvement

Strong partnerships with citizen groups and organizations provide support for incident management prevention, preparedness, response, recovery, and mitigation. The US Citizen Corps brings these groups together and focuses efforts of individuals through education, training, and volunteer service to help make communities safer, stronger, and better prepared to address the threats of terrorism, crime, public health issues, and disasters of all kinds.

The Mission Assignment (MA) Process

FEMA coordinates the federal response process through their role as coordinating agency for ESF #5, Information and Planning. When FEMA must task another federal agency with disaster-related work, that tasking (and any associated reimbursement) is performed through the vehicle of the Mission Assignment (MA). MA is essentially a work order that is issued by FEMA to another federal agency directing the completion of a specific task, and citing funding, other managerial controls, and guidance. MAs may be given in anticipation of, or response to, a presidential declaration of an emergency or major disaster. The MA itself is not a grant or contract to another federal agency; instead, it is a reimbursable work order for a specific task that can be performed before and/or after a declaration. To speed up the process of providing federal support, a large number of Pre-Scripted Mission Assignments, or PSMAs, have been drafted. (Related Video: Debris removal continues after Hurricane Sandy –<http://bit.ly/2fAMUKT>).

NRF Operations Coordination

When the NRF is activated, the response operations that result require a significant amount of coordination to be effective given the multiple partners and stakeholders. Coordination structures exist at each government level where operations are being conducted. Within each coordination structure there is a range of actions and activities going on that enable decision makers to determine the appropriate course of action and to provide oversight for the emergency operations being conducted. Each serves a unique and important purpose, and includes the following:

Local Incident Command Post (ICP)

Local coordinating structures are typically composed of entities within a specific functional area such as public works, law enforcement, emergency medical services, and fire departments. Integration among these structures occurs at an Incident Command Post (ICP). The ICP is the field location where the primary tactical-level, on-scene incident command functions are performed. The ICP may be collocated with the incident base or other incident facilities and is normally identified by a green rotating or flashing light. ICS is used not only by government, but also by private and nonprofit sector organizations as well.

Local Emergency Operations Center (EOC)

If the local incident commander determines that additional resources or capabilities are needed, he or she contacts the local EOC and relays requirements to the local emergency manager. The EOC is the physical location at which the coordination of information and resources to support local incident management activities within a defined local jurisdiction normally takes place.

State Emergency Operations Center (EOC)

This is the physical location at which the coordination of information and resources to support state incident management activities normally takes place. State EOCs are activated as necessary to support local EOCs and to ensure that responders have the resources they need to conduct response activities. This is achieved through integration of state-level coordinating structures working with local coordinating structures or the local incident command structure. State EOCs are typically organized by a combination of ESFs or other coordinating structures aligned to disciplines or capabilities.

National Operations Center (NOC)

The NOC is the primary national hub for situational awareness and operations coordination across the federal government for incident management. It

provides the secretary of Homeland Security and other principals with the information necessary to make critical national-level incident management decisions. The NOC is a continuously operating multiagency operations center. The NOC's staff monitors many sources of threat and hazard information from across the United States and abroad. It is supported by a 24/7 watch officer contingent, including (1) NOC managers; (2) selected federal interagency, state, and local law enforcement representatives; (3) intelligence community liaison officers provided by the DHS chief intelligence officer; (4) analysts from the Operations Division's interagency planning element; and (5) watch standers representing dozens of organizations and disciplines from the federal government and others from the private sector. The NOC facilitates homeland security information sharing and operations coordination with other federal, state, tribal, local, and nongovernmental partners. During a response to a significant incident, the NOC meets its information-fusion and information-sharing responsibilities by providing spot reports, situation reports, and other information-sharing tools, all supported by and distributed through its common operating picture. The continued development and rapid integration at the federal, state, tribal, and local levels of electronic reporting and information-sharing tools supporting the NOC's common operating picture is a very high priority of the Framework.

National Response Coordination Center (NRCC)

The NRCC is FEMA's primary operations management center, as well as the focal point for national resource coordination. As a 24/7 operations center, the NRCC monitors potential or developing incidents and supports the efforts of regional and field components. The NRCC also has the capacity to increase staffing immediately in anticipation of or in response to an incident by activating the full range of ESFs and other personnel as needed to provide resources and policy guidance to a Joint Field Office (JFO) or other local incident management structures. The NRCC provides overall emergency management coordination, conducts operational planning, deploys national-level entities, and collects and disseminates incident information as it builds and maintains a common operating picture. Representatives of nonprofit organizations within the private sector may participate in the NRCC to enhance information exchange and cooperation between these entities and the federal government.

National Infrastructure Coordinating Center (NICC)

The NICC monitors the nation's critical infrastructure and key resources on an ongoing basis. During an incident, the NICC provides a coordinating forum to share information across infrastructure and key resources sectors through appropriate information-sharing entities such as the Information Sharing and Analysis Centers and the Sector Coordinating Councils.

National Military Command Center (NMCC)

The NMCC is the nation's focal point for continuous monitoring and coordination of worldwide military operations. It directly supports combatant commanders, the chairman of the Joint Chiefs of Staff, the secretary of defense, and the president in command of the US Armed Forces in peacetime contingencies and war. Structured to support the president and secretary of defense effectively and efficiently, the center participates in a wide variety of activities, ranging from missile warning and attack assessment to management of peacetime contingencies such as Defense Support of Civil Authorities (DSCA) activities. In conjunction with monitoring the current worldwide situation, the center alerts the Joint Staff and other national agencies to developing crises and will initially coordinate any military response required.

National Counterterrorism Center (NCTC)

The NCTC serves as the primary federal organization for integrating and analyzing all intelligence pertaining to terrorism and counterterrorism and for conducting strategic operational planning by integrating all instruments of national power.

Strategic Information and Operations Center (SIOC)

The FBI SIOC is the focal point and operational control center for all federal intelligence, law enforcement, and investigative law enforcement activities related to domestic terrorist incidents or credible threats, including leading attribution investigations. The SIOC serves as an information clearinghouse to help collect, process, vet, and disseminate information relevant to law enforcement and criminal investigation efforts in a timely manner. The SIOC maintains direct connectivity with the NOC. The SIOC, which is located at FBI headquarters, supports the FBI's mission in leading efforts of the law enforcement community to detect, prevent, preempt, and disrupt terrorist attacks against the United States. The SIOC maintains liaison with the National Joint Terrorism Task Force (NJTTF). The mission of the NJTTF is to enhance communications, coordination, and cooperation among federal, state, tribal, and local agencies representing the intelligence, law enforcement, defense, diplomatic, public safety, and homeland security communities by providing a point of fusion for terrorism intelligence and by supporting Joint Terrorism Task Forces throughout the United States.

Joint Operations Center (JOC)

The JOC branch is established by the Senior Federal Law Enforcement Officer (SFLEO) (e.g., the FBI SAC during terrorist incidents) to coordinate and direct law enforcement and criminal investigation activities related to the incident. The JOC branch ensures management and coordination of federal, state, local, and tribal investigative/law enforcement activities. The emphasis of the JOC is

on prevention as well as intelligence collection, investigation, and prosecution of a criminal act. This emphasis includes managing unique tactical issues inherent to a crisis situation (e.g., a hostage situation or terrorist threat). When this branch is included as part of the Joint Field Office (JFO), it is responsible for coordinating the intelligence and information function (as described in NIMS), which includes information and operational security, and the collection, analysis, and distribution of all incident-related intelligence. Accordingly, the Intelligence Unit within the JOC branch serves as the interagency fusion center for all intelligence related to an incident. If a Joint Field Office (JFO) is established (see below), the JOC becomes part of the JFO.

Joint Information Center (JIC)

The Joint Information Center (JIC) is also a valuable tool for getting emergency management partners on the same page. In disasters of catastrophic or nationally significant proportions, a JIC is established to coordinate the dissemination of information about all disaster response and recovery programs. Public Affairs Officers (PAOs) who represent all of the federal, state, local, and voluntary agencies providing response or recovery services are invited to collocate and be a part of JIC operations. Interagency coordination is one of the central functions of the JIC, and teamwork is a key to implementing successful public information and media affairs programs. JICs involve coordination among the Federal Coordinating Officer (FCO), the lead state PAO, the congressional liaison, community relations and disaster assistance program managers, and other public agency PAOs.

Other DHS Operations Centers

Depending on the type of incident (e.g., National Special Security Events), the operations centers of other DHS operating components may serve as the primary operations management center in support of the secretary. These are the US Coast Guard, the Transportation Security Administration, US Secret Service, and US Customs and Border Protection operations centers.

Incident Level Coordination: The Joint Field Office (JFO)

A JFO is a temporary federal facility established locally to coordinate operational federal assistance activities to the affected jurisdiction(s) during declared disasters. The JFO is a multiagency center that provides a central location for coordination of federal, state, local, tribal, nongovernmental, and private sector organizations with primary responsibility for threat response and incident support. The JFO enables the effective and efficient coordination of federal incident-related prevention, preparedness, response, and recovery actions. It utilizes the scalable organizational structure of the Incident Command System (ICS), and its organization adapts to the magnitude and complexity of the situation at hand. Although the JFO uses an ICS structure, it does not manage on-scene operations. Instead, it focuses on providing support to on-scene efforts and conducting broader support operations that may extend beyond the incident site.

There are a number of key JFO sections that are integral to its functioning. These include:

Operations Section. The Operations Section coordinates operational support to on-scene incident management efforts. Branches may be added or deleted as required, depending on the nature of the incident. The Operations Section also is responsible for coordination with other federal command posts that may be established to support incident management activities. The Operations Section may include the following elements:

- The **Response and Recovery Operations Branch** coordinates the request and delivery of federal assistance and support from various special teams. This branch is composed of four groups: emergency services, human services, infrastructure support, and community recovery and mitigation.
- The **Law Enforcement Investigative Operations Branch/Joint Operations Center (JOC)** is established by the Senior Federal Law Enforcement Official (SFLEO) (e.g., the FBI Special Agent in Charge (SAC) during terrorist incidents) to coordinate and direct law enforcement and criminal investigation activities related to a terrorist incident. The JOC branch ensures management and coordination of federal, state, local, and tribal investigative/law enforcement activities. The emphasis of the JOC is on prevention as well as intelligence collection, investigation, and prosecution of a criminal act. This emphasis includes managing unique tactical issues inherent to a crisis situation (e.g., a hostage situation or terrorist threat).
- For National Special Security Events (NSSEs), a third branch, the **Security Operations Branch, or Multi-agency Command Center (MACC)**, may be added to coordinate protection and site security efforts. In these situations, the Operations Section Chief is designated by mutual agreement of the JFO Coordination Group based on the agency with greatest jurisdictional involvement and statutory authority for the current incident priorities. The

agency providing the Operations Section Chief may change over time as incident priorities change.

Planning Section. The Planning Section provides current information to the JFO Coordination Group to ensure situational awareness, determine cascading effects, identify national implications, and determine specific areas of interest requiring long-term attention. The Planning Section also provides technical and scientific expertise. The Planning Section is composed of the following units: situation, resources, documentation, technical specialists, and demobilization. The Planning Section may also include an information and intelligence unit (if not assigned elsewhere).

Logistics Section. The Logistics Section coordinates logistics support that includes the following:

- Control and accountability for federal supplies and equipment
- Resource ordering
- Delivery of equipment, supplies, and services to the JFO and other field locations
- Facility location, setup, space management, building services, and general facility operations
- Transportation coordination and fleet management services
- Information and technology systems services, administrative services such as mail management and reproduction, and customer assistance

The Logistics Section may include Coordination and Planning, Resource Management, Supply, and Information Services Branches.

Finance and Administration Section (Comptroller). The Finance and Administration Section is responsible for the financial management, monitoring, and tracking of all federal costs relating to the incident and the functioning of the JFO while adhering to all federal laws, acts, and regulations. The position of the financial and administration chief will be held exclusively by a comptroller who serves as the senior financial advisor to the team leader (e.g., FCO) and represents the coordinating agency's chief financial officer (CFO) as prescribed by the CFO Act of 1990.

FEMA Incident Management Assistance Teams (IMATs)

FEMA has developed a number of full-time, rapidly-deployable emergency response teams called Incident Management Assistance Teams (IMATs). IMATs can deploy within 2 hours of notification and can arrive at an incident within 12 hours to support the local incident commander. The teams support the initial establishment of a unified command and provide situational awareness for federal and state decision makers crucial to determining the level and type of immediate federal support that may be required.

IMATs are built on the concept of a former group of national and regional response teams called ERT-Ns (National Emergency Response Teams) and ERT-As (Regional Emergency Response Teams). These teams are still being staffed and developed, but the plan is to eventually have 3 National IMATs with 16 full-time staff each, and 13 Regional IMATs staffed with 4 full-time and 6 collateral duty personnel each. All 10 FEMA Regions will have 1 dedicated IMAT team except for Regions II, IV, and VI, which will each have 2 teams.

IMATs provide a forward federal presence to facilitate the management of the national response to catastrophic incidents. The primary mission of a FEMA IMAT is to rapidly deploy to an incident or incident-threatened venue, provide leadership in the identification and provision of federal assistance, and coordinate and integrate inter-jurisdictional response in support of an affected state or territory.

IMATs are led by experienced, senior-level emergency managers and staffed with a core of permanent full-time employees. When not deployed, the teams are responsible for building and maintaining a close working relationship with regional, state, tribal, and local emergency management officials, federal partners, and the private sector to support planning, training, exercising, and other activities in preparation for disaster response (FEMA, 2010b). (Related video: "IMAT—Meeting the Challenge"—<http://bit.ly/2fhXnJr>. Related video: "IMAT Operational Response Exercise"—<http://bit.ly/2e7g6rt>.)

Case Study: Joplin, Missouri Tornado

The city of Joplin is located in the southwest corner of Missouri, and has a population of 49,024. During the day, the population rises to 270,000 because the city houses major industrial, agricultural, and educational resources, among others. Joplin sits squarely within an area of unusually high tornado risk called "tornado alley."

On Sunday, May 22, 2011, the conditions were perfect for the creation of a tornado-producing supercell thunderstorm. The storm tracked from southeast Kansas to southwest Missouri in the late afternoon and into the evening. As it moved, it generated a number of tornadoes. At 2:40 pm, the National Weather Service (NWS) Storm Prediction Office issued a tornado watchout for parts of

Arkansas, Kansas, Missouri, and Oklahoma. A tornado was spotted near Joplin around 5:45 pm, and the Joplin/Jasper County Emergency Management began coordinating with the NWS to track it. A warning was issued for Joplin at 6:17 pm, which ultimately gave residents 24 minutes to take action before its arrival. Outdoor emergency sirens were sounded at 6:17 pm and again at 6:31 pm.

At 6:41 pm E DT, an EF-5 tornado touched down in Joplin with winds exceeding 200 mph. The tornado cut a 22.1 mile path that was 1 mile wide and passed for 6 miles through the city. The tornado caused catastrophic loss of life and almost completely destroyed the commercial district of the city. It resulted in 161 fatalities and 1371 injuries, making it the single deadliest US tornado since 1947 and the seventh deadliest in US history. Thousands of structures were destroyed and damaged, from single family homes to apartment buildings to large retail and public buildings (including a major hospital and several big-box stores.) The housing loss was phenomenal for a tornado, with 4380 homes completely destroyed and another 3884 damaged. The high school was completely destroyed, but by luck a graduation ceremony was being held offsite and a major additional loss of life was avoided.

In the immediate aftermath of the tornado, emergency responders and the public began conducting search and rescue operations in damaged buildings and providing medical care and shelter for survivors. An estimated 3 million cubic yards of debris had been generated and needed to be cleared and disposed. All of the major healthcare facilities sustained damage, and 183 patients had to be evacuated within 90 minutes of the event. The Empire District Electric Company reported the loss of 130 transmission poles throughout the city, resulting in power loss to 18,000 customers. Thousands were forced to seek lodgings with families or friends, or at an American Red Cross established shelter at a nearby university.

FEMA had been conducting disaster response and recovery in Missouri in the months prior to the Joplin tornado. Severe winter storms in Jan. and Feb. 2011 led President Barack Obama to issue a major disaster declaration for 59 counties throughout the state. FEMA Administrator Craig Fugate had appointed an FCO, and a JFO had been established in Columbia, Missouri. Several weeks later, spring storms brought damaging tornadoes and flooding to Missouri. On May 9th, 2011, President Obama had issued a major disaster declaration for five counties in Missouri for that flooding. Administrator Fugate had also appointed an FCO for that event, with the JFO continuing to operate from its offices in Columbia. On the evening of May 22, 2011, shortly after the tornado, FEMA Headquarters, Region VII Administrator Freeman and the FCO activated in Missouri held a series of calls to discuss how FEMA could support response operations in Joplin. The state of Missouri had the option to request that the Joplin event be added to the existing declaration or to have a new presidential declaration made. Administrator Fugate issued an amendment to the existing declaration on May 23, 2011, which provided individual assistance, debris removal, and emergency protective measures funding to individuals in Jasper and Newton counties.

Source: FEMA. 2011. The Response to the 2011 Joplin, Missouri, Tornado: Lessons Learned Study.
<http://bit.ly/2fi1NAk>.

Key Federal Response Officials

Several senior federal government officials play important roles in the activation of a federal disaster response effort, several of whom may be deployed to oversee the federal effort. These include the following:

Principal Federal Official (PFO)

By law and by presidential directive, the secretary of Homeland Security is the *principal federal official* responsible for coordination of all domestic incidents requiring multiagency federal response. The DHS secretary is authorized to designate someone from either within or outside the Department of Homeland Security to serve as his or her primary representative and to ensure consistency in and effectiveness of the provision of federal support. When appointed, the PFO serves in the field at the incident location. Congress has provided that, notwithstanding the general prohibition on appointing a PFO for Stafford Act incidents, “there may be instances in which FEMA should not be the lead agency in charge of the response, such as a pandemic outbreak or an Olympic event.” Congress also recognized that there may be “major non–Stafford Act responses that may include a Stafford Act component.” In either situation, the DHS secretary may assign a PFO. It is important to note that the DHS secretary is only likely to appoint a PFO for catastrophic or unusually complex incidents that require extraordinary levels of coordination. Once appointed, the PFO interfaces with federal, state, tribal, and local jurisdictional officials regarding the overall federal incident management strategy and acts as the primary federal spokesperson for coordinated media and public communications. The PFO is as a member of the Unified Coordination Group (see below) and provides a primary point of contact and situational awareness locally for the secretary of Homeland Security. A PFO is a senior federal official with proven management experience and strong leadership capabilities. The PFO deploys with a small, highly trained mobile support staff, and once formally designated for an ongoing incident they relinquish the conduct of all previous duties to focus exclusively on incident management. The same individual will *not* serve as the principal federal official and the federal coordinating officer (FCO—see below) at the same time for the same incident. When both positions are assigned, the FCO will have responsibility for administering Stafford Act authorities, as described below.

The PFO does not direct or replace the incident command structure established at the incident, nor does the PFO have directive authority over a federal coordinating officer, a senior federal law enforcement official, a DOD Joint Task Force commander, or any other federal or state official. Other federal incident management officials retain their authorities as defined in existing statutes and directives. Rather, the PFO promotes collaboration and, as possible, resolves any federal interagency conflict that may arise. The PFO identifies and presents to the secretary of Homeland Security any policy issues that require

resolution.

Unified Coordination Group

The JFO is directed by a Unified Coordination Group (UCG), which is typically comprised of several or all of the following officials (as determined by the needs of the incident):

- *The Federal Coordinating Officer*, who is appointed by the president to execute Stafford Act authorities
- *The State Coordinating Officer*, who is appointed by the governor to coordinate state disaster assistance efforts
- *The Federal Resource Coordinator*, who DHS may designate in non-Stafford events when one or more federal departments or agencies acting under their own authority has requested DHS assistance in obtaining support from another other federal department or agency. The FRC coordinates support through interagency agreements and memorandums of understanding.
- *The Joint Task Force Commander*, who the Department of Defense (DOD) may designate to command military activities in support of a disaster incident if the type and complexity of the incident warrants such action. This official maintains operational control of federal military personnel and most defense resources in the federal response, except in the case that the entity is guided by another authority (as in the case of the US Army Corps of Engineers or the National Guard).
- *The Senior Health Official*, who is the senior official from the Department of Health and Human Services and who represents the Assistant Secretary for Preparedness and Response (ASPR). The Senior Health Official is deployed in events with significant ESF #8 requirements.
- *The Defense Coordinating Officer*, who is drawn from a cadre of ten Defense Coordinating Officers (DCOs) assigned by DOD to each of the FEMA regions. If requested, this official serves as DOD's single point of contact at the JFO for requesting military assistance. With few exceptions, requests for Defense Support of Civil Authorities (DSCA) originating at the JFO are coordinated with and processed through the DCO.
- *The Senior Federal Law Enforcement Official (SFLEO)*, who is appointed by the attorney general during an incident requiring a coordinated federal response to coordinate all law enforcement, public safety, and security operations with intelligence or investigative law enforcement operations directly related to the incident. The SFLEO is responsible for ensuring that allocation of law enforcement requirements and resource allocations are coordinated as appropriate with all other members of the UCG. In the event of a terrorist incident, the SFLEO will normally be a senior FBI official who has coordinating authority over all law enforcement activities related to the incident, both those falling within the attorney general's explicit authority as recognized in HSPD-5 and those otherwise directly related to the incident itself.

Based on the scope and nature of an incident, senior officials from other

federal departments and agencies; state, tribal, or local governments; and the private sector or nongovernmental organizations may participate in a UCG. Usually, the larger and more complex the incident, the greater the number of entities represented. In catastrophic or complex incidents, a Principal Federal Official (PFO) may be appointed to serve as the Secretary of Homeland Security's representative. When appointed, the PFO works within the UCG and interfaces with all levels of responders regarding the overall federal incident management strategy but does not direct nor replace the incident command structure established at the incident.

On Jun. 1, 2014, President Obama directed the Department of Homeland Security and FEMA to establish a Unified Coordination Group to manage the response to the crisis created by unaccompanied minors crossing into the United States from Mexico. As noted in a DHS press release, “the Unified Coordination Group was established to leverage Federal resources to provide humanitarian relief to the ongoing situation” ([DHS, 2014](#).) The following infographic in both English and Spanish was developed to explain the unified effort to address this crisis.

Unaccompanied Children at the Southwest Border

At the direction of the President, a Unified Coordination Group is leveraging Federal resources to address the humanitarian situation associated with the influx of unaccompanied children entering the U.S. across the southwest border. This chart depicts the general process to enhance capacity resulting from federal coordination.



Source: DHS, 2014. <http://bit.ly/2f0keJa>.

Federal Coordinating Officer (FCO)

For Stafford Act incidents (i.e., emergencies or major disasters), upon the recommendation of the FEMA administrator and the secretary of Homeland Security, the president appoints an FCO. The FCO is a senior FEMA official trained, certified, and well experienced in emergency management, and specifically appointed to coordinate federal support in the response to and recovery from emergencies and major disasters. The FCO executes Stafford Act authorities, including commitment of FEMA resources and the mission assignment of other federal departments or agencies. If a major disaster or emergency declaration covers a geographic area that spans all or parts of more than one state, the president may decide to appoint a single FCO for the entire incident, with other individuals as needed serving as deputy FCOs.

In all cases, the FCO represents the FEMA administrator in the field to discharge all FEMA responsibilities for the response and recovery efforts under way. In Stafford Act incidents, the FCO is the focal point of coordination within the UCG, ensuring overall integration of federal emergency management, resource allocation, and seamless integration of federal activities in support of, and in coordination with, state, tribal, and local requirements. Some FCOs are given additional, specialized training regarding unusually complex incidents. For example, one may be further trained for catastrophic earthquake response, whereas another might cultivate unique skills for response related to weapons

of mass destruction or pandemic influenza.

Pre-Designation of PFOs and FCOs

In certain scenarios, the secretary of Homeland Security may pre-designate a PFO and/or an FCO. Such predesignation can focus on specified geographic areas or be based on specific potential threats, or a combination of both. For example, beginning in 2007, the secretary predesignated a national PFO and five regional PFOs together with a national FCO and regional FCOs, who will serve in the event of a nationwide outbreak of pandemic influenza or other similar nationwide biological event. Predesignation of these leadership teams is allowing for sustained advance planning conducted with state, tribal, and local leaders.

State Coordinating Officer (SCO)

The SCO plays a critical role in managing the state response and recovery operations following Stafford Act declarations. The governor of the affected state appoints the SCO, and lines of authority flow from the governor to the SCO, following the state's policies and laws. For certain anticipated events in which a Stafford Act declaration is expected, such as an approaching hurricane, the secretary of Homeland Security or the FEMA administrator may predesignate one or more federal officials to coordinate with the SCO to determine resources and actions that will likely be required and begin deployment of assets. The specific roles and responsibilities of the SCO include serving as the primary representative of the governor for the affected state or locality with the RRCC or within the JFO once it is established; working with the federal coordinating officer to formulate state requirements, including those that are beyond state capability, and set priorities for employment of federal resources provided to the state; ensuring coordination of resources provided to the state via mutual aid and assistance compacts; providing a linkage to local government; and serving in the UCG in the JFO.

Other Senior Officials

Based on the scope and nature of an incident, senior officials from other federal departments and agencies, state, tribal, or local governments, and the private sector or NGOs may participate in a UCG. Usually, the larger and more complex the incident, the greater the number of entities represented.

FEMA National Disaster Reservists

FEMA manages a cadre of more than 7000 National Disaster Reservists. These were formerly called Disaster Assistance Employees, or (DAEs, though the DAE program was terminated in Oct. of 2012). Reservists are federal employees that work on an on-call, intermittent basis. They form the bulk of the FEMA

workforce during disasters, and are critical to the FEMA mission in the disaster-impacted areas. Reservists staff the Joint Field Offices (JFOs) and Disaster Recovery Centers (DRCs), interview disaster victims, conduct and verify damage assessments, provide administrative, financial and logistical support, and perform a wide variety of other tasks as identified by staffing needs and operational requirements. Reservists typically deploy a minimum of once per year for a minimum of 30 days per deployment. Reservists are classified according to the FEMA Qualification System (FQS) which characterizes individuals by their specific skills and knowledge (Figs. 6.8 and 6.9).

Fema Qualification System (FQS)

FEMA has recently begun a new program of establishing benchmarks of skills and knowledge required for each different position in the FEMA workforce. A panel of subject matter and program experts from the existing FEMA workforce began this process in mid-2011. These experts developed the baseline qualifications for each program position, and then began the process of evaluating each cadre member against those standards for training, experience, and performance. The process for determining current FEMA employee qualifications has grown out of the National Incident Management System (NIMS). The FQS has only two rating levels: *Trainee* and *Qualified*. Trainees are personnel who are working through the required steps to fully qualify for their position. Fully qualified personnel have met the standards for qualification as determined through a formal process based on their experience, training, and performance.

Related Video: FEMA Minnesotans Work Near Home—<http://bit.ly/2ek1sbu>.

Critical Thinking

- What are the strengths and weaknesses of the National Response Framework?
- Would disaster response be more efficient if the federal government had the authority to assume power over any disaster response, regardless of the ability of local response agencies? Why or why not?

FEMA'S Mobile Operations Capability

Disasters may require resources beyond the capabilities of the local or state authorities. In response to regional requests for support, FEMA provides mobile telecommunications, operational support, life support, and power generation assets for the on-site management of disaster and all-hazard activities. This support is managed by the Response and Recovery Directorate's Mobile Operations Division (RR-MO).

The Mobile Operations Division has a small headquarters staff and five geographically dispersed Mobile Emergency Response Support (MERS) Detachments and the Mobile Air Transportable Telecommunications System (MATTs) to:

- Meet the needs of the government emergency managers in their efforts to save lives, protect property, and coordinate disaster and all-hazard operations
- Provide prompt and rapid multimedia communications, information processing, logistics, and operational support to federal, state, and local agencies during catastrophic emergencies and disasters for government response and recovery operations

The MERS and MATTS support the Disaster Field Facilities. They support the federal, state, and local responders—not the disaster victims.

Available Support

Each of the MERS Detachments can concurrently support a large Disaster Field Office and multiple field operating sites within the disaster area. MERS is equipped with self-sustaining telecommunications, logistics, and operations support elements that can be driven or airlifted to the disaster location. MATTS and some of the MERS assets can be airlifted by C-130 military cargo aircraft.

The MERS and MATTS are available for immediate deployment. As required, equipment and personnel will deploy promptly and provide:

- Multimedia communications and information processing support, especially for the Communications Section, Emergency Support Function (ESF) #2 of the Federal Response Plan (FRP)
- Operational support, especially for the Information and Planning Section, ESF #5 of the FRP
- Liaison to the Federal Coordinating Officer (FCO)
- Logistics and life support for emergency responders
- Automated information and decision support capability
- Security (facility, equipment, and personnel) management and consultation

Most equipment is preloaded or installed on heavy-duty, multiwheel drive trucks. Some equipment is installed in transit cases.

Source: FEMA, www.fema.gov.



FIGURE 6.8 The Butte fire scorched 110 square miles of public and private property including this single family home. Over 549 homes were burned down to the ground as a result of fast moving wildfires that were catastrophic to this community. Adam DuBrowa/FEMA.



FIGURE 6.9 Hattiesburg, Mississippi, Mar. 1, 2013—This Red Cross van is

parked at the First Trinity Baptist Church on Mobile Street, handing out snacks and other small items to local residents. American Red Cross volunteers are positioning their trucks in locations where they can provide food and supplies to workers and disaster survivors. Photo by Marilee Caliendo/FEMA.

State-to-State Support: The Emergency Management Assistance Compact (EMAC)

The Emergency Management Assistance Compact (EMAC) is a national-level mutual aid program that has all 50 states, the District of Columbia, Puerto Rico, Guam, and the US Virgin Islands as its members. It was established in 1996. Through EMAC, states that have disasters declared by their governor can request assistance from other members in the forms of personnel, equipment, and commodities that are needed to respond to the disaster they are facing. EMAC has a unique dedicated governance structure composed of the International Association of Emergency Managers, an EMAC Committee, administration, an advisory group, an executive task force, and operational components. This distinguishes it from other mutual aid agreements which typically exist as agreements on paper. EMAC also benefits from its relationships with response organizations at all government levels.

According to EMAC, “Thirty-eight (38) of the 54 EMAC states sent resources and over 2,600 personnel to New York, New Jersey, Maryland, Massachusetts, Connecticut, and Pennsylvania in a response that lasted 5 months” ([EMAC, 2016](#)). Historic flooding in 2016 in South Carolina resulted in “more than 177 personnel from 7 states assisting in response efforts in South Carolina. Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina and Tennessee have provided advance teams, incident management staff, swift-water rescue and search and rescue teams, individual assistance specialists, public information officers, damage assessment teams” ([EMAC, 2016](#)).

States request assistance through EMAC using a five-phase process that provides the necessary systematic approach, form, and structure for assistance provision. These phases include ([Fig. 6.10](#)):

1. *Pre-Event Preparation:* Participant jurisdictions develop internal procedures for implementing the compact, incorporate lessons learned into their planning, perform resource typing and predetermine cost estimates, and conduct EMAC training and exercises in cooperation with their state emergency management agencies.
2. *Activation:* Affected jurisdictions identify needs and communicate them to the state office of emergency management. The state determines the appropriate course of action, whether that involves a presidential disaster declaration request, request from the private sector, from EMAC, or any other source.
3. *Request and Offer:* State agencies use their in-state resource request procedures to route all requests, including those under EMAC, to their home state emergency management agency. Once a state emergency management agency identifies a need or receives a request for assistance and determines that those resources are best obtained through EMAC Member States, the request and offer phase of the EMAC process begins.
4. *Response:* After all request requirements have been satisfied, including a contractual agreement between the assisting and requesting states, the

movement of resources begins. Staff mobilize and deploy, and tap into the coordination and the command and control systems in place.

5. *Reimbursement*: After the need for assistance has ended, the requesting state begins the process of reimbursing the assisting state for the agreed-upon personnel, material, and service assistance that was provided.

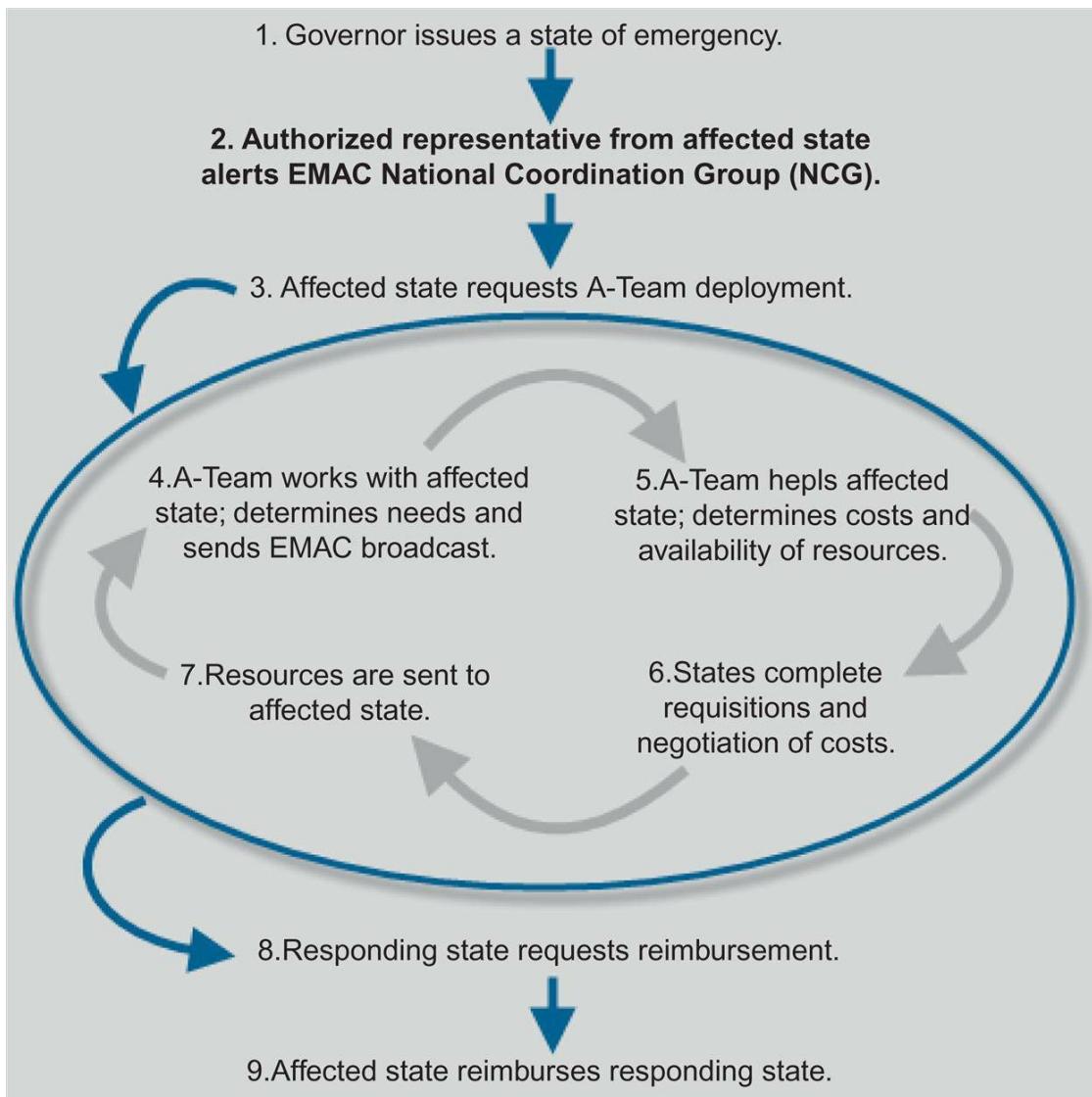


FIGURE 6.10 The EMAC process flow. Reprinted courtesy of www.emacweb.org.

EMAC offers the following benefits:

- EMAC assistance may be more readily available than other resources.
- EMAC allows for a quick response to disasters using the unique human resources and expertise possessed by member states.
- EMAC offers state-to-state assistance during governor-declared states of emergency and a responsive and straightforward system for states to send personnel and equipment to help disaster relief efforts in other states. When resources are overwhelmed, EMAC helps to fill the shortfalls.
- EMAC establishes a firm legal foundation: Once the conditions for providing assistance to a requesting state have been set, the terms constitute a legally binding contractual agreement that makes affected states responsible for reimbursement. Responding states can rest assured that sending aid will not be a financial or legal burden, and personnel sent are protected under workers' compensation and liability provisions. The EMAC legislation solves the problems of liability and responsibilities of cost and allows for credentials

to be honored across state lines.

- EMAC provides fast and flexible assistance: EMAC allows states to ask for whatever assistance they need for any type of emergency, from earthquakes to acts of terrorism. EMAC's simple procedures help states dispense with bureaucratic wrangling.
- EMAC can move resources such as medical provisions that other compacts cannot.

Conclusion

Responding to disaster events is the most visible activity that any federal, state, or local emergency management agency conducts. The politicians, the media, and the general public rate the success of an emergency management organization by how well it functions in the response phase of a disaster. A successful disaster response at any level of government requires a strong command and control system, clear lines of communication, and coordination of numerous agencies from multiple jurisdictions. Local first responders—fire, police, and emergency medical technicians—are on the scene first. Local and state emergency managers coordinate resources and assess the damage and the capacity of their jurisdictions to respond effectively. For major disaster events, a presidential disaster declaration activates the NRF that delivers the full resources of the federal government in support of local and state authorities.

Currently, the nation's response to major disasters is guided by the National Response Framework (NRF), which defines the roles and responsibilities of federal, state, and local government, voluntary agencies, and the private sector and provides guidance on how these groups plan and work together in a disaster response. One element that is currently missing in the nation's response capability is an agreement similar to the Federal Response Plan (FRP) and the National Response Plan (NRP) that preceded the NRF that identifies and empowers a single federal agency responsible for coordinating the efforts of the federal government in responding to a major disaster in support of state and local partners. FEMA was created in 1979 in response to the demand made by state emergency management directors and their governors that the federal government establish a single agency to coordinate the federal response. The NRF does not designate a single federal agency that has the authority to coordinate the activities of all federal departments and agencies as FEMA did as part of the FRP and the NRP. This missing piece in the current federal response is of concern to its state and local partners and must be addressed if the federal response is to be timely and effective in the future.

Important Terms

Emergency management/response personnel
Emergency Operations Plan
Emergency Support Function
First responders
Incident Command System (ICS)
Incident Commander (IC)
National Incident Management System (NIMS)
National Response Framework
Federal Coordinating Officer (FCO)
State Coordinating Officer (SCO)
Unified Command

Self-Check Questions

1. How is the National Guard deployed to assist in response to a disaster?
2. What is the role of first responders when a routine “minor disaster” occurs in a local community?
3. What drives the actions of local first responders?
4. Where can you find a detailed description of the roles and responsibilities of first responders in your community?
5. Who is usually in charge of developing and maintaining the community emergency plan?
6. Where does the emergency management office reside at the state level? Give three examples.
7. What is the principal source of funding for state emergency management offices?
8. What kinds of things do volunteer organizations provide for victims in the aftermath of a disaster?
9. What is the Incident Command System, and why was it originally developed?
10. What are the five major management systems within the Incident Command System?
11. What is the role of the incident commander?
12. At whose discretion is the decision to make a disaster declaration?
13. What is the National Response Framework?
14. How does the National Response Framework compare to its predecessors, the National Response Plan and the Federal Response Plan?
15. What are some of the reasons why communications among responding agencies is crucial?

Out-of-Class Exercises

1. Contact your state National Guard office. Find out what kinds of resources they can offer to assist local communities in the event of a disaster and what kind of training and exercises they conduct to prepare their members for disaster response.
2. Make a list of the primary differences between the command and control, and the coordination response models.
3. Contact your local ham radio organization and take a certification course. Use your certification to get involved in local response. You can get more information from the Amateur Radio Relay League (ARES; <http://bit.ly/2eFOCKH>).
4. Take a Community Emergency Response Team (CERT) course. To find a course near you, visit the Citizen Corps CERT website at <http://bit.ly/2fkS0HN>.

The Disciplines of Emergency Management

Recovery

Abstracts

Without a doubt, the federal government plays the largest role in providing the technical and financial support for recovery. For that reason, this chapter focuses on the federal role in the disaster recovery function. It discusses the structure and the various programs available to assist individuals and communities in the post-disaster environment. The various national voluntary organizations that provide some assistance for recovery are briefly referenced, and several case studies are included to demonstrate the different types of recovery.

Keywords

National disaster recovery framework; disaster recovery center; federal disaster recovery coordinator; Federal Coordinating Officer (FCO); Joint Field Office (JFO); National Processing Service Center (NPSC); recovery; state coordinating officer and zoning

WHAT YOU WILL LEARN:

- The role of the National Disaster Recovery Framework (NDRF), and the different positions included in the NDRF Cadre
- Post-disaster recovery actions taken by the federal government
- Programs administered by FEMA to fuel individual and community recovery capacity
- Federal recovery actions and assistance by agencies other than FEMA
- The recovery role of national voluntary relief organizations
- The purpose and value of pre-disaster recovery plans

Introduction

There is a persistent theoretical debate about when the response function ends and the recovery function begins, and how the two are connected. The *response function* was previously classified as including those immediate actions that are taken to save lives, protect property, and meet basic human needs. The recovery function is not so easily defined. Recovery operations often begin in the initial hours and days following a disaster event and can continue for months and, in some cases, years, depending on the severity of the event (Fig. 7.1). But in reality, recovery is most effective when it has been addressed long before the disaster has occurred, through pre-disaster recovery planning, relationship building, and other actions that are described in this chapter.



FIGURE 7.1 Columbia, N.C., Sep. 16, 2011—All that remains of this home following the EF2 tornado is the framing steel and scattered belongings. FEMA is in the area providing assistance to survivors. Marilee Caliendo/FEMA.

Unlike response, where almost all efforts pursue a finite and easily definable foci (namely limiting the various immediate impacts of the disaster), the recovery function or process is characterized by a complex set of issues and decisions that must include much wider representation from within and often

outside the greater stakeholder community. Recovery decisions and actions relate to the rebuilding of homes, replacement of lost property, resumption of employment and livelihoods, restoration of businesses and other economic drivers, and permanent repair and rebuilding of infrastructure. The recovery process requires a balance between the more immediate need of the community to return to normalcy with the longer-term goal of reducing future vulnerability. An effective recovery process can actually present for impacted individuals and the communities where they live many new opportunities to become economically secure and to enjoy improved safety and quality of life.

Because recovery outcomes have long-lasting ramifications and are typically associated with extremely high costs, the stakeholders involved grows beyond those normally involved in preparedness, mitigation, and response. They draw from all levels of government, the business community, the political leadership, community activist communities, and individuals. Each of these groups influences recovery progress for better or for worse. Some stakeholder roles are regulatory, such as those related to the application of state or local building ordinances, while others, such as those related to risk transfer (insurance), lending, grants, and philanthropic giving, exist to provide much-needed financial support. Effective recovery planners and managers must be able to bring each of these different players together to plan, finance, and implement a recovery strategy that will rebuild the disaster-affected area more safely, and more securely, as quickly as possible.

As previously noted in [Chapter 6](#), The Disciplines of Emergency Management: Response, the precipitating event for federal involvement in a disaster is the presidential emergency or disaster declaration as defined by the Stafford Act. Federal recovery activities begin immediately after a presidential declaration. Once a declaration is issued, the various federal departments and agencies can begin collaborating with the state in the affected area to coordinate the implementation of recovery programs and the delivery of recovery services.

Historically, FEMA has obligated an annual average of \$2.88 billion on public assistance projects in support of major disaster declarations, with individual disasters averaging approximately \$58 million in costs. FEMA has historically obligated over \$153 million each year in public assistance for emergency declarations, averaging nearly \$11 million per incident.

Fundamentals of Disaster Recovery

Once immediate lifesaving activities are complete, the focus shifts to assisting individuals, households, critical infrastructure, and businesses in meeting basic needs and returning to self-sufficiency (see Sidebar “When Recovery Begins”). Even as the immediate imperatives for response to an incident are being addressed, the need to begin recovery operations emerges. The emphasis upon response will gradually give way to recovery operations. Within recovery, actions are taken to help individuals, communities, and the nation return to normal. Depending on the complexity of this phase, recovery and cleanup efforts involve significant contributions from all sectors of our society.

- *Short-term recovery* is immediate and overlaps with response. It includes actions such as providing essential public health and safety services, restoring interrupted utility and other essential services, reestablishing transportation routes, and providing food and shelter for those displaced by the incident. Although called “short-term,” some of these activities may last for weeks.
- *Long-term recovery*, which is outside the scope of the Framework, may involve some of the same actions but may continue for a number of months or years, depending on the severity and extent of the damage sustained. For example, long-term recovery may include the complete redevelopment of damaged areas.

When Recovery Begins

When the recovery begins can vary from disaster to disaster and from community to community. Christine Becker identified the following opinions on this issue in her article “Disaster Recovery: A Local Government Responsibility” (Becker, 2009).

“Frances L. Edwards, associate director of the Collaboration for Disaster Mitigation in San Jose, California, and former director of emergency services in San Jose, California, says the recovery process begins ‘when the situation is no longer getting worse, all the living have been rescued, and the community has found the floor.’”

Institute for Building Technology and Safety’s (IBTS) Disaster Management Group director Brett Kriger says that the recovery process begins even before the response stage is complete due to the fact that decisions that are made while responding to the emergency ultimately affect the recovery process. Kriger says that, “there’s usually a 30% overlap in the middle where the community is still responding while gearing up for recovery.” Becker states that Kriger, who has direct experience with FEMA response and recovery operations, feels that actions taken during response influence recovery success. He also feels that local officials are so concerned with the time constraints and urgency of response that they end up failing to take the necessary steps that would have otherwise opened the door to greater access to recovery funding.

Marcy Douglas, who was a city administrator in Northwood, a small

community in North Dakota with 1000 residents that was devastated by a category 4 tornado (Aug. 26, 2007), believes that the community must commit to recovery starting on the first day of the emergency, and doing this is what helped Northwood to rebound so well in the aftermath of their own disaster. Douglas characterized this need by stating that, “if you respond to a disaster with recovery in mind, recovery will happen.” (Becker, 2009.)

Recovery from an incident is unique to each community and depends on the amount and kind of damage caused by the incident and the resources that the jurisdiction has ready or can quickly obtain ([Fig. 7.2](#)). In the short term, recovery is an extension of the response phase in which basic services and functions are restored ([Fig. 7.3](#)). In the long term, recovery is a restoration of both the personal lives of individuals and the livelihood of the community. Recovery can include the development, coordination, and execution of service- and site-restoration plans; reconstitution of government operations and services; programs to provide housing and promote restoration; long-term care and treatment of affected persons; and additional measures for social, political, environmental, and economic restoration. Recovery programs do the following:

- Identify needs and resources
- Provide accessible housing and promote restoration
- Address care and treatment of affected persons
- Inform residents and prevent unrealistic expectations
- Implement additional measures for community restoration
- Incorporate mitigation measures and techniques, as feasible



FIGURE 7.2 Glenville, New York, Apr. 18, 2012—Infrastructure on Lock-9 of the Erie Canal system on the Mohawk River is being repaired for flood control systems announced by Governor Andrew Cuomo as part of a state-wide works project. FEMA plays a vital role supporting state, tribal, and local governments

as they respond with recovery efforts. Hans Pennink/FEMA.

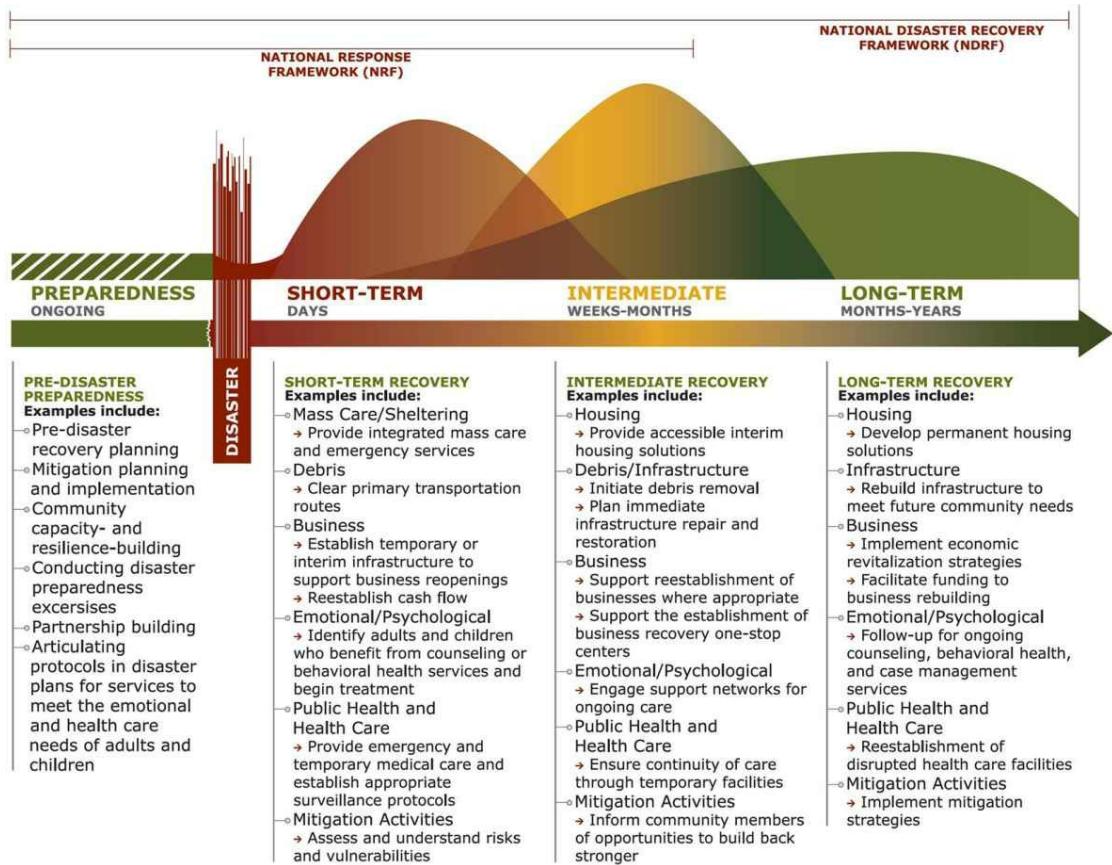


FIGURE 7.3 The FEMA NDRF Recovery Continuum—Provides descriptions of activities by phase, and outlines the typical process leading toward recovery.

Recovery Coordination and Leadership

Coordination during recovery is critical to recovery success. It is needed because long-term recovery is complex and long lasting, spanning from the event's earliest hours to months and even years or decades thereafter. And it is needed because recovery sectors are so diverse, often inclusive of infrastructure, education, construction, supply chain management, services, and much more—each of which is distinct from each other yet highly interdependent. Actions in each sector cannot often occur without inter-sectorial coordination, and there is a need to address the formation of new partnerships and relationships. There is likely to be impacts and implications that mandate greater collaboration between different government offices and agencies, and between the governmental and nongovernmental sectors, and many of these partnerships are not likely to have been established prior to the event.

Leadership is a key component of coordination. During recovery, leadership needs are similar to those required during the standard (non-disaster) community development process—but with greater time constraints and elevated pressures. Like community development, disaster recovery activities help to shape the long-term vision and goals of the community, and both involve great capital investments from a wide range of sources. They also both bring together a variety of development actors, many of which have different and even competing priorities and which may have no prior history of working together. And both types of activities are shaped and dictated by local laws and ordinances, including land-use, building codes, construction permitting processes, zoning restrictions, and other regulatory mechanisms. That being said, recovery complexity typically exceeds that of general development because: (1) there are many more activities happening concurrently; (2) there is much less time to perform assessments and to plan accordingly; (3) there are factors stemming from the disaster that make required activities more difficult, such as the presence of disaster debris, a shortage of supplies and human resources, increased uncertainty, and building moratoria, among many other factors; and (4) there is a need to address newly identified risks and vulnerabilities. On the other hand, there is a unique opportunity to address a number of the community's major vulnerability and risk factors at once. A good leader must be able to navigate each of these factors and complexities, and for that reason the selection of a recovery leader becomes a major step for disaster-impacted communities that cannot be taken lightly.

Coordination is loosely defined as being, “the organization of the different elements of a complex body or activity so as to enable them to work together effectively.” ([Oxford Dictionary, 2015](#)). While good leadership encourages collaborative and inclusive recovery behavior, leadership alone is rarely enough to ensure effective coordination. Recovery coordination requires the existence of systems, structures, and procedures designed specifically for the factors presented. Coordination mechanisms are organizational structures and systems. They have human components that include the individuals who hold

specific positions of responsibility and authority, procedural or administrative components that define how the structure operates, and authoritative components that give credence and power to any decisions or orders that are dictated. [Topping \(2005\)](#) writes that, “the central element of good decision making in the short-term recovery period following a disaster is the community’s designation of a recovery management team that is empowered to monitor the process and implement the community’s post-disaster recovery policies”. [Coppola \(2015\)](#) writes, “[w]ithout rapid and proper coordination mechanisms, many projects will begin on their own, irrespective of any central plans drawn to guide the recovery”. And in the International Recovery Platform’s *Recovery Guidance Note: Recovery Planning*, the authors explain the need for recovery coordination by describing the recovery setting as follows:

The post-disaster environment is commonly a period requiring intense decision-making based on limited information, about complex issues with very powerful and long term impacts. In the immediate aftermath, the extent of damage and recovery needs is uncertain and the residual iterative effects of the disaster and repercussions of relief or recovery efforts create a constantly changing environment. Additionally, a large influx of resources needs to be coordinated, allocated, and tracked, while all the while ensuring minimal waste and maximum sustainability. Finally, pre-existing governance structures are often overwhelmed by the demands of managing recovery and the urgency to show visual progress, particularly when they have been adversely impacted by the disaster.

[International Recovery Platform \(2010\).](#)

Recovery coordination structures may be required either by local ordinance, in accordance with local plans, or by state or federal agencies that are providing disaster recovery assistance. But really there is no reason for a community to avoid establishing one given the benefits they typically provide, including:

1. They provide a mechanism for establishing a common, centralized operational view of the ongoing recovery efforts.
2. They provide a structure through which all stakeholder groups are able to participate or find representation.
3. They enable the collection and sharing of information.
4. They promote the sharing or exchange of resources.
5. They help the community to build a cache of technical knowledge and expertise.
6. They promote collaborative decision-making.
7. They promote relationship building.
8. They improve recovery-financing efforts.
9. They enable monitoring and accountability of both decision-making and of the implementation of recovery actions.

Because recovery begins almost immediately after the disaster strikes, coordination of recovery activities must begin concurrently with disaster response operations. Little time exists for conducting the massive amount of

planning that is required to ensure effective and efficient recovery, and much of the information used to support long-term recovery is similar to or equivalent to the information collected in the conduct of recovery-focused damage and loss assessments. Furthermore, many response decisions influence how long-term recovery plays out. Effective coordination therefore requires the existence of mechanisms through which recovery stakeholders are able to coordinate their activities with those performed in the Emergency Operations Center.

It is occasionally the case that a suitable coordination structure already exists, negating the need for a disaster-impacted community to design something new. This could be the result of a previous pre-disaster recovery planning effort, or perhaps because of a previous disaster recovery operation. If a new structure is needed, the community must determine what type of management structure to use. There are generally four different options:

1. A **Recovery Committee**, which is strategic in their function and concerned primarily with decision-making. Emergency Management Australia describes recovery committees as existing to provide, “visible and strong leadership and [to] have a key role in restoring confidence to the community through assessing the consequences of the emergency and coordinating activities to rebuild, restore and rehabilitate the social, built, economic and natural environments of the affected community” ([Australian Emergency Management Institute, 2011](#)). Recovery committees may be responsible for any or all of the following:

- a. Providing guidance on decisions that pertain to recovery priorities, the allocation of resources, and the overall management of resources.
- b. Developing and maintaining the community recovery plan, both in advance of a disaster and in its aftermath.
- c. Monitoring and coordinating the activities of governmental agencies and other entities that have statutory responsibility for the delivery of services during recovery.
- d. Ensuring that relevant stakeholders are involved in the development and implementation of recovery objectives and strategies and that they remain informed of recovery progress.
- e. Maintaining alignment of recovery with local and national recovery priorities and principles and ensuring that recovery actions adhere to legal guidelines.
- f. Reporting on the ongoing and final progress of recovery efforts.

2. A **Recovery Taskforce or Task Group**, which is a groups of individuals that are assembled together to work on a single defined task or activity. These entities draw their membership from a range of different agencies and sectors that together provide a basis of technical knowledge, skills, and operational networks specific to the required task or policy issue. In large-scale disasters, where the range of issues is too great for a centralized committee to handle them in a manner that is effective, multiple taskforces may be created, typically reporting to the recovery committee. A taskforce may also be formed to provide direct assistance, such as to individuals or households.

3. A **Recovery Organization**, which takes a more active role in the administration of recovery efforts that go beyond decision-making and

coordination of resources. Their membership may go beyond representation and take on more of a partnership arrangement with response and recovery agencies, nongovernmental organizations, and faith-based organizations. Because they typically receive funding in the form of collected donations and in-kind resources from businesses, foundations, and individuals, it is often the case that they operate as a 501(c)(3) tax-exempt nonprofit organization or are formed within an existing organization that has the tax-exempt status. Recovery organizations typically have a formal leadership that includes a board of directors. Recovery organizations will work to assess and identify unmet needs and apply resources from a common pool, to be disbursed on case-by-case basis.

4. A **Recovery Consultation or Advisory Group**, which is something a disaster-impacted community creates to enable community stakeholders to meet and provide views or guidance that shape the recovery process. These groups serve the needs of or represent different community members in the recovery planning and decision-making processes. Recovery committees and taskforces may choose to create a consultation or advisory group in order to work out specific issues that require public input or for which dialog is desired. These groups may be assigned a specific focus, such as a Functional Needs Advisory Group or a Small Business Advisory Group, or they may act as a catch-all for ideas which are collated and summarized in a way that best informs the ongoing planning and operational efforts.

Case Studies: Recovery Coordination

Ocean County, NJ

Ocean County was impacted by Hurricane Sandy in Oct. of 2012. On Dec. 11, 2013, representatives from Ocean County's Department of Planning, a regional planning organization Together North Jersey (TNJ), the North Jersey Transportation Planning Authority, the New Jersey Department of State Office of Planning Advocacy, Rutgers University, and consultant Michael Baker, Jr. met as a steering committee to begin the long-term community recovery (LTCR) planning process.

This group created a recovery vision for the county, developed recovery goals, and identified projects aimed at achieving the long-term recovery vision. A draft LTCR plan was disseminated for public comment in Jun. of 2014.

A public involvement plan was established that focused on engaging key stakeholders in the community in the planning process. Members of the steering committee attended meetings and presented information about the LTCR process to the Barnegat Bay Partnership Advisory Committee, the Comprehensive Emergency Assistance Systems Committee (CEAS), and the Ocean County Long Term Recovery Group (OC LTRG). Surveys were distributed at all meetings to obtain feedback about unmet needs and potential recovery project ideas. Outreach was also performed at a Community Rating System Application Process Technical Assistance Seminar given for

municipalities at the Jacques Cousteau National Estuarine Research Reserve, at a Resiliency meeting led by FEMA at the Ocean County Office of Emergency Management, and at a contractors' meeting in Little Egg Harbor for builders working to elevate and renovate homes in the area.

On Feb. 24, 2014, the steering committee met with key stakeholders during 2-hour morning and afternoon sessions at the Ocean County Library in Toms River. In total, 25 people participated in the meetings. Additional meetings were held with stakeholders and municipal representatives in both the northern and southern portions of the county on Mar. 6, 2014. Nearly 70 people attended these meetings. The goal of the meetings was to gather stakeholder input to formulate a long-term recovery vision, assess unmet needs, evaluate current recovery efforts, and develop goals and projects for achieving recovery not only after Superstorm Sandy but in the event of future disasters as well.

Final meetings were held on Apr. 29th, 2014, in the both the northern and southern portions of the county for stakeholders and municipal representatives to review LTCR Plan content and evaluate proposed recovery projects. Attendees were asked to provide detailed project information including potential champions, funding sources and purpose. Stakeholders reviewed the criteria for ranking projects and how recovery value is defined and measured. The Draft LTCR Plan was finalized after incorporating feedback obtained during the public comment period and reviews by the Ocean County Department of Planning, NJTPA, The Bloustein School of Rutgers University, and the US Department of Housing and Urban Development. (Ocean County, 2015)

Monroe County, Florida (Pre-Disaster Plan)

Monroe County (FL) established a recovery coordination committee as part of the pre-disaster recovery planning process. This mechanism is detailed in the County plan, which states that, "recovery activities are operational in nature and begin while response operation activities are still underway. For most events, these activities will begin in the Emergency Operations Center (EOC) as staff work to assemble data on the extent of damages." The Recovery Planning Unit is established in the EOC to begin the first draft of a "Recovery Incident Action Plan (RIAP)" for use by a Recovery Action Team (RAT).

As the emergency response phase stabilizes, the County EOC begins the coordination of disaster recovery activities and recommends the activation of the RAT as appropriate.

The County establishes a RAT in the event of a disaster in order to:

1. Oversee the recovery and reconstruction process and serve as an advisory committee to the Disaster Recovery Manager and the County Administrator.
2. Identify mitigation opportunities, identify resources, and ensure maximum control over the recovery process.
3. Prepare a redevelopment plan.
4. Develop procedures to carry out build-back policies.
5. Develop policies for redeveloping areas that have sustained repeated disaster damage.

6. Develop policies that promote mitigation from future damage.
7. Develop priorities for relocating and acquiring damaged property.

A Recovery Planning Unit is established in the EOC to begin the first draft of the RIAP for use by the Recovery Taskforce. The Recovery Taskforce is established to oversee the recovery and reconstruction process and to serve as an advisory committee to the County Mayor/County Commission and municipal chief elected officials. The Recovery Taskforce may also be responsible for:

1. Preparing a redevelopment plan.
2. Developing procedures to carry out build-back policies.
3. Developing policies for redeveloping areas that have sustained repeated disaster damage.
4. Developing policies that promote mitigation from future damage.
5. Developing priorities for relocating and acquiring damaged property.

Additionally, the Recovery Taskforce develops a specific, more refined RIAP based on the first draft developed by the EOC Plans Section. This event-specific RIAP specifies which recovery functions are to be activated. The RIAP also defines a phased recovery program with priority actions taken to:

1. Eliminate life-threatening conditions
2. Restore utility and transportation services
3. Provide and restore suitable housing conditions
4. Resume normal economic activity
5. Expedite the securing of financial assistance from both the public and private sectors
6. Restore other important County services to normal levels
7. Restore the community's physical facilities, both public and private, such as waste collection, street lighting, street cleaning, traffic control, schools, nurseries, daycare, etc.
8. Return all essential services to operating status (e.g., water, sewage, electricity, gas, refuse pickup, etc.).
9. Return personnel to normal work schedules and assignments. (Monroe County, 2009)

The Joint Field Office (JFO) remains the central coordination point among local, tribal, state, and federal governments, as well as private sector and nongovernmental entities that are providing recovery assistance. Federal and state recovery coordination actions might include any of the following:

- Coordinating assistance programs to help individuals, households, and businesses meet basic needs and return to self-sufficiency.
- Establishing Disaster Recovery Centers. federal, state, tribal, local, voluntary, and nongovernmental organizations determine the need for and location of Disaster Recovery Centers. Staff provides recovery and mitigation program information, advice, counseling, and related technical assistance.
- Coordinating with private sector and nongovernmental organizations involved in donations management and removal, and the repair or replacement of disaster-damaged public facilities and associated

environmental restoration.

- Coordinating with the private sector on restoration and recovery of Critical Infrastructure and Key Resources (CIKR). Activities include working with owners/operators to ensure the restoration of critical services, including water, power, natural gas, and other recovery activities.
- Coordinating public assistance grant programs authorized by the Stafford Act. These programs aid local, tribal, and state governments and eligible private nonprofit organizations with the cost of emergency protective services, debris petroleum, emergency communications, and health care.
- Coordinating mitigation grant programs to help communities reduce the potential impacts of future disasters. Activities include developing strategies to rebuild resilient communities.

After the JFO closes, ongoing activities transition to individual agencies with primary recovery responsibilities. Federal partners then work directly with their regional or headquarters offices to administer and monitor recovery programs, support, and technical services.

Additional Research

The following is a list of community disaster recovery plans developed in the aftermath of recent disasters:

- Blenheim, New York: <http://bit.ly/21AhZg7>
- Chambers, Texas: <http://bit.ly/1IsKkhX>
- Galveston, Texas: <http://bit.ly/1Rrj1qy>
- Greensboro and Kiowa County, Kansas: <http://bit.ly/1NtWX8C>
- Highlands, New Jersey: <http://bit.ly/1jCq3ef>
- Mayflower, Arkansas: <http://bit.ly/1Qja4P1>
- Oakville, Iowa: <http://bit.ly/11AkP3Z>
- Ocean County, New Jersey: <http://bit.ly/1Q4pYyh>
- Palm Beach County, Florida: <http://bit.ly/1OKr3Ip>
- St. John the Baptist Parish, Louisiana: <http://bit.ly/1OBFb8u>
- Schoharie, New York: <http://bit.ly/1HJSMTj>
- Smithville, Mississippi: <http://bit.ly/21Ap6Fn>
- Souris Basin Regional Recovery Strategy (Minot, Burlington, and Ward County, ND): <http://bit.ly/1jCu8yZ>
- Spirit Lake Nation: <http://bit.ly/21Appjs>
- Vilonia, Arkansas: <http://bit.ly/1OKr6UA>
- Wilmington, Vermont: <http://bit.ly/1Nu5kkp>

Source: FEMA. <http://1.usa.gov/29fmUyM>.

Recovery Sectors

Disasters inflict profound impacts on communities, including the physical destruction of buildings and infrastructure, damage to the natural environment, deaths and both physical and psychological injuries to people, deaths of and injuries to animals, economic losses, service disruptions, and much more. It is the great variance in impacts between communities and between different hazards that makes disaster recovery planning so difficult for those who are tasked with doing it.

In many communities, those who become involved in disaster recovery planning come from all walks of life and are not likely to have had very much actual previous disaster recovery experience. Furthermore, if the community has not performed any pre-disaster recovery planning, it is likely that there are no standard operating procedures or established strategies to draw from when faced with the range of post-disaster damages and losses the community must contend with. While pre-disaster recovery planning and prior recovery planning experience are both very useful (and perhaps vital), there will always be a great degree of variance in the situation presented, simply because disasters differ with regards to their consequences, the geographic area affected, the time of day or season of the year when they strike, and other factors.

Recovery-planning efforts even for the same hazard (e.g., tornadoes) can be very different between communities due to the nature of the specific impacts incurred. Recovery needs and capacities are diverse, but planners must group them into defined themes. For instance:

If farmers were impacted, they must manage the financial impacts of lost crops and will need support in replacing or repairing equipment and facilities used in the agricultural operation. This is commonly referred to as the *agriculture sector*.

If schools were impacted, temporary educational facilities must be secured while a new school is built or the damaged school is repaired. This is commonly referred to as the *education sector*.

Businesses need support in paying for repairs and reconstruction, finding temporary facilities to continue their operations, and other needs. This is commonly referred to as the *private sector*, the *economic sector*, or the *business sector*.

Power transmission, water system, gas, communications, and other aspects of community infrastructure may have been impacted and subsequently require repair or replacement. These are commonly referred in the collective as the *infrastructure* or *utilities sector*.

Homeowners will need to repair or reconstruct their houses. This is commonly referred to as the *housing* or the *shelter sector*.

Government buildings will need to be replaced or repaired. This is commonly referred to as the *governance sector* (though government is often included as a component of infrastructure).

Medical facilities, including hospitals and clinics, may require repair or

replacement, and in the meantime alternate options for medical services will need to be established. This is commonly referred to as the *health and medical sector*.

Different recovery requirements will call upon different resources, including information, knowledge, stakeholders, contractors, and equipment and supplies, to name a few. The presence of different requirements will affect operational timelines and will be further influenced by different social norms, perceptions, and preferences. There will also be vastly different legal frameworks that guide the actions required and the nature of roles and responsibilities for planning, performing, and paying for these same actions. For the planning committee or coordination mechanism in place, these differences between sectors may be so great as to dictate the need for specialized teams or work groups to be established.

Federal Government Disaster Recovery Assistance

For most communities impacted by a major disaster, successful recovery would be difficult or even impossible without federal government assistance. It is perhaps most visible in terms of the inter-agency efforts provided during response, including those focusing on mass care, search and rescue, evacuation, addressing the ongoing effects of hazards (e.g., flood fighting), emergency medical care, and others. In recovery, the different financial support mechanisms, including FEMA Public Assistance (PA), Individual Assistance (IA), and mitigation assistance, are also highly visible and typically the focus of attention during the declaration process and soon thereafter. But technical assistance is often needed by impacted communities as well, whether to address recovery planning itself or to address the particulars of needs that have arisen in a specific recovery sector.

In one form or another, the federal government, through FEMA, the Department of Housing and Urban Development, the Small Business Administration, and other relevant agencies, helps disaster-impacted communities following declaration to identify their long-term recovery needs and to formulate the plans and strategies to allow long-term recovery to occur. At present, this assistance is coordinated through the National Disaster Recovery Framework, or NDRF. But it hasn't always been this way, and in fact the organization of recovery assistance has been in flux for decades.

Since 1988, the Stafford Act has provided the statutory authority required by many of the most impactful federal disaster response and recovery programs, notably those which involve FEMA. Although the Stafford Act has been amended several times, the original passage of this legislation included a provision directing the creation of a national-level plan to better coordinate activities of all emergency management stakeholders in their support of disaster-impacted state and local governments. The result of this movement was the creation of the Federal Response Plan (FRP), which was completed and officially released in 1992, and which has been mentioned previously in other contexts throughout this text. Its design included a base plan and used several operational annexes to direct the activities of various federal and nongovernmental agencies around distinct functions.

The 27 departments and agencies (including the American Red Cross) named in the plan each became bound signatories, and as such each was supported in their efforts to develop the capacity required to respond to any calls to activate in their specific areas of expertise as needed (to provide support in one or more areas as they pertained to the work those stakeholders regularly conducted.) The original FRP included 12 functional areas of federal support, which were termed Emergency Support Functions (ESFs). Each ESF, which was organized as an annex to the base plan, named a coordinator and listed several primary and support agencies (each of which had distinct roles as determined by its

designation as a primary or support agency). Other sections of the ESF included a statement of purpose, a scope, relevant policies, a concept of operations, the organization of command and control, and the actions and responsibilities expected of each pertinent agency. These annex-style planning tools are so effective that they have since come to form the structure of most emergency response plans that exist at all government levels.

When the FRP was created, none of the 12 original ESFs addressed the recovery function. In fact, in the scope of the original FRP, the following language was included: "The FRP does not specifically address long-term reconstruction and redevelopment." That being said, agencies were expected to provide recovery planning support to disaster impacted communities as they were able. The FRP did have a "Recovery Function Annex" that addressed a wide variety of recovery issues, including how the various FRP agencies will provide recovery planning and operational assistance, and what specific programs exist to enable support. This annex conveyed the opinion that planning and needs assessment were the responsibility of the state and local governments, and that the role of the federal government was one of facilitating the different recovery programs which included SBA disaster loans, IA and PA funding, and others.

In 2004, in the aftermath of and as a direct result of the Sep. 11th terrorist attacks, the Federal Response Plan was replaced by a National Response Plan (NRP). Homeland Security Presidential Directive 5 (HSPD-5) authorized the design and development of a National Response Plan to align federal coordination structures, capabilities, and resources into a unified, all-discipline, and all-hazards approach to domestic incident management. One of the major changes associated with the new NRP was the addition of three new emergency support functions. Emergency Support Function (ESF) #14, Long-Term Community Recovery, was among these three new ESFs (the other two being Public Safety and Security and Internal Affairs).

Soon after its release, the NRP was replaced with a new National Response Framework (NRF). The NRF Document, which remains the guiding document for federal response actions today, presents key response principles, as well as the various federal and non-federal roles and structures that comprise a national response. Like the NRP, the NRF includes 15 ESFs that help to coordinate and guide assistance in 15 distinct areas of support. ESF#14 continued to address post-disaster recovery as the transition took place.

ESF #14, titled *Long-Term Community Recovery*, was introduced in response to recognition that more attention on effective planning and coordination of long-term recovery efforts was needed. The mission of the function read as follows:

The mission of ESF #14 is to promote successful long-term recoveries for communities suffering extraordinary damages. It does so by working through the State to identify and coordinate potential sources of recovery funding; and to provide technical assistance in the form of impact analyses and recovery planning support where appropriate.

ESF#14 also contained language that, “the mission is complete when all potential resources have been identified and coordinated with the severely damaged areas, when warranted impact analyses are done, and when the necessary support has been provided to launch community recovery plans.” ESF#14 was designed for situations where the community had experienced severe or even catastrophic damage, and the planning and coordination needs exceeded what could be performed locally. Federal assistance under ESF#14 included public sector coordination and planning assistance, and technical expertise to inform community decisions. This often included the facilitation of workshops, and events, the organization of community meetings, and other outreach and messaging that were required to ensure that the community planning process was inclusive and broad-reaching.

Activation of ESF #14 was determined by assessment, which included a preliminary screening of damages and needs, an analysis of local recovery capacity, and other factors (including the geographic extent of the disaster, damage to businesses, impacts on community identity, and the existence of vulnerable populations, among others). With an assessment in hand, the Federal and State Coordinating Officers could make a decision of the level of assistance that would be provided, which on the basic end would include provision of a self-help recovery guide but which could be expanded up to targeted or even comprehensive technical assistance.

Oftentimes, ESF#14 assistance focused around the planning and facilitation of community meetings. Recovery specialists also helped community leaders to initiate and complete the recovery planning process, given that most community leaders had little to no experience with recovery planning. The process was typically structured using a two-phased approach, which included a federally-led phase and a community-led phase. Both were to be supported by the state. The first phase would utilize ESF #14 Technical Assistance and/or Targeted Planning Teams along with State support to guide communities through the LTCR Process. As a community moved through the LTCR Process, recovery activities gradually transitioned to community-led initiatives and implementation of identified projects and programs. During the second phase, communities were assisted by the State but received ongoing federal agency support, as appropriate.

Between 2004 and 2011, ESF#14 was activated more than 180 times, resulting in almost 100 recovery plans and dozens of new recovery organizations. Despite this assistance, many communities felt that the 30–90 days of assistance provided were insufficient to address the longer-term nature of the recovery planning needs they had (or it was determined by outside assessment that the recovery assistance provided was insufficient in the long-run given difficulties encountered by the community following the demobilization of ESF#14 resources). Furthermore, it was felt that many of the concepts addressed by ESF#14, including recovery-specific leadership, organizational structure, planning guidance, and other components needed to be expanded to improve upon the assistance that was being provided.

In Sep. of 2009, President Obama charged the Department of Homeland

Security (DHS) and the Department of Housing and Urban Development (HUD) to establish a Long-Term Disaster Recovery Working Group. Composed of more than 20 federal departments, agencies and offices, this working group was asked to develop operational guidance for recovery organizations. These efforts led to the creation of the NDRF, which replaced ESF#14 and officially separated LTCR with the National Response Framework.

The new NDRF is linked to the NRF but is contained in its own fully independent documentation structure. It was developed according to requirements and guidelines originating from two key directives:

The Post-Katrina Emergency Management Reform Act of 2006, or PKEMRA, which required FEMA to develop a National Disaster Recovery Strategy.

Presidential Policy Directive (PPD)-8, titled "National Preparedness", which directed FEMA to work with its interagency partners to publish a NDRF and supporting operational plans as an integral element of a National Preparedness System.

The NDRF was at the time of its release the second of five planned national-level planning frameworks that were called upon under PPD-8. Prior to its release, the NDRF was field tested during the Apr. 2011 tornadoes that struck in Alabama. At that time, there was still quite a bit of confusion about what the NDRF was, how it works, how it was operationalized, and what its implementation meant in terms of ESF#14 (which still existed at the time at the federal level and which exists to this day in many state and local EOPs.) The final draft of the NDRF document was released in Sep. of 2011.

The purpose of the NDRF is to ensure coordination and recovery planning at all levels of government before a disaster, and to define how stakeholders will work together following a disaster to best meet the needs of disaster impacted states and communities. It aims to achieve a disaster recovery system that is "more responsive to community needs by moving quickly and making flexible, common sense decisions coordinated across all levels of government, non-governmental organizations, and the private sector."

It is important to note that the NDRF was written to assist a larger audience of non-federal government executives, private sector and nongovernmental organization (NGO) leaders, emergency managers, community development professionals and disaster recovery practitioners.

The NDRF is much more comprehensive in defining how the nation approaches disaster recovery than ESF#14 was. It establishes coordination structures, leadership roles and responsibilities, and guides recovery planning at all levels of government before a disaster happens. It also introduces six recovery support functions (RSFs) that are led by designated federal coordinating agencies. These coordinating federal agencies support state, local, tribal and private sector groups with community planning and capacity building, regaining economic stability, rebuilding infrastructure, restoring health and social services and natural and cultural resources, and meeting the housing needs of residents displaced by disasters. The six RSFs include:

Community Planning and Capacity Building

Economic

Health and Social Services
Housing
Infrastructure
Natural and Cultural Resources

The NDRF also recommends and identifies key recovery leadership positions designed to allow for more concentrated focus on community recovery. These include state/tribal disaster recovery coordinators and local disaster recovery managers, as well as a Federal Disaster Recovery Coordinator when needed for large-scale and catastrophic disasters.

The NDRF was designed to define how federal agencies may more effectively organize and operate to utilize existing resources to promote effective recovery and support to States, Tribes and other jurisdictions affected by a disaster. It was written for a larger audience of non-federal government executives, private sector and nongovernmental organization (NGO) leaders, emergency managers, community development professionals and disaster recovery practitioners. The focus of the NRF, as previously described, is the response actions as well as the short-term recovery activities that immediately follow or overlap those actions. The NDRF, however, does not address any short-term activities like lifesaving and life sustaining activities, property protection, and other measures intended to neutralize the immediate threat to life, environment, and property, or to stabilize the community. Yet because these activities influence recovery activities, the need for a structure to consider and advice on recovery implications during the early phases of incident management is important.

The NDRF provides the tools to encourage early integration of recovery considerations into the response phase operations. Moreover, the core principles and organizational constructs introduced in the NDRF are designed to coexist with the NRF and build upon its organizational structure and resources to more effectively address recovery needs. The NRF fully transitions to the NDRF when the disaster-specific mission objectives of the Emergency Support Functions (ESFs) are met.

The relationship of the NDRF to the NRF

The NRF

- Focuses on the coordinated response actions of federal, state and local communities
- Manages the short-term recovery activities that immediately follow or overlap response actions

The NDRF

- Defines recovery roles and responsibilities
- Promotes the establishment of post-disaster organizations to manage recovery
- Promotes a deliberate and transparent process that provides well-coordinated support to the Community

- Offers strong, focused recovery leadership at the state and tribal level, supported by strong federal recovery leadership

The NDRF bases achievement of effective recovery upon the adherence to nine core principles. The purpose of these nine principles is to lay out the common goals that should be adhered to in all components of recovery in order to maximize recovery success. While intended for incidents that involve the NDRF, the nine recovery principles could apply to any disaster recovery scenario. These principles include:

1. Individual and Family Empowerment: "All community members must have equal opportunity to participate in community recovery efforts in a meaningful way."
2. Leadership and Local Primacy: "Successful recovery requires informed and coordinated leadership throughout all levels of government, sectors of society and phases of the recovery process. [...] Local, State and Tribal governments have primary responsibility for the recovery of their communities and play the lead role in planning for and managing all aspects of community recovery."
3. Pre-Disaster Recovery Planning: "The speed and success of recovery can be greatly enhanced by establishment of the process and protocols prior to a disaster for coordinated post-disaster recovery planning and implementation."
4. Partnerships and Inclusiveness: "Partnerships and collaboration across groups, sectors and governments promote a successful recovery process. [...] Inclusiveness in the recovery process includes individuals with disabilities and others with access and functional needs, advocates of children, seniors and members of underserved populations."
5. Public Information: "Clear, consistent, culturally appropriate and frequent communication initiatives promote successful public information outcomes."
6. Unity of Effort: "A successful recovery process requires unity of effort, which respects the authority and expertise of each participating organization while coordinating support of common recovery objectives."
7. Timeliness and Flexibility: "A successful recovery process upholds the value of timeliness and flexibility in coordinating and efficiently conducting recovery activities and delivering assistance. It also minimizes delays and loss of opportunities. The process strategically sequences recovery decisions and promotes coordination; addresses potential conflicts; builds confidence and ownership of the recovery process among all stakeholders; and ensures recovery plans, programs, policies and practices are adaptable to meet unforeseen, unmet and evolving recovery needs."
8. Resilience and Sustainability: "A successful recovery process promotes practices that minimize the community's risk to all hazards and strengthens its ability to withstand and recover from future disasters, which constitutes a community's resiliency."
9. Psychological and Emotional Recovery: "A successful recovery process addresses the full range of psychological and emotional needs of the community as it recovers from the disaster through the provision of support, counseling, screening and treatment when needed."

The NDRF also identified seven factors that drive successful recovery. These include:

1. Effective Decision-making and Coordination
2. Integration of Community Recovery Planning Processes
3. Well-managed Recovery
4. Proactive Community Engagement, Public Participation and Public Awareness
5. Well-administered Financial Acquisition
6. Organizational Flexibility
7. Resilient Rebuilding
8. Group Discussion

Key NDRF Staff

The vast majority of NDRF assistance is provided by a group of trained recovery professionals collectively referred to as the National Disaster Recovery Support (NDRS) Cadre. Most work on an on-call basis. The deployment of NDRS Cadre staff occurs when a community requires disaster recovery planning support. However, such deployments are not automatic. In fact, they can only occur after:

- The assistance has been requested
- A number of actions have been taken to assess whether such assistance is required
- An appropriate set of recovery assistance resources has been assembled to address the assessed needs
- A plan of support has been crafted

During an NDRF deployment, there are a number of key positions that are staffed in order to perform the various tasks associated with leadership, needs assessment, the provision of assistance to the impacted communities, planning facilitation, and other activities (note that not all positions are drawn from the NDRS Cadre, and in fact leadership almost never is.). Each of these key leadership positions is described.

NDRF leadership is responsible for establishing a management structure for recovery assistance that is appropriate for the event presented in order to best address the recovery issues and needs of local, state, tribal, territorial, and insular area jurisdictions (and their respective recovery organizational structures.)

1. The Federal Coordinating Officer (FCO)

The Federal Coordinating Officer, or FCO, is not a recovery-specific official. However, as the senior federal official specifically designated as a member of the Unified Coordination Group for response to and recovery from emergencies and major disasters, this official plays an important role in initiating an NDRF deployment and choosing key recovery leadership positions. An FCO is appointed by the President when a Presidential disaster declaration has been made, in order to execute Stafford Act authorities. This includes the commitment of FEMA resources and the issuance of mission assignments

(MAs) to other federal departments or agencies. The FCO works with their counterparts at the state, tribal, or territorial levels (State/Tribal/Territorial Coordinating Officer (SCO/TCO)) and with other local, state, tribal, territorial, and insular area response officials during such events. Together these officials determine the most urgent needs and set objectives for the interagency response that follows. When an NDRF deployment is necessary, or when there is a need to determine whether or not federal recovery assistance per the NDRF is required, the FCO may appoint a Federal Disaster Recovery Coordinator (FDRC)

2. The Federal Disaster Recovery Coordinator (FDRC)

The Federal Disaster Recovery Coordinator is the most senior Federal government official within the organizational structure of an NDRF-driven deployment. The FDRC leads the recovery component of the federal disaster activities that are assigned by the Presidentially-appointed Federal Coordinating Officer (FCO). The FDRC is, in essence, the local, state, and tribal entry point for federal recovery-related matters, and the primary contact for helping to identify and resolve recovery needs. Because it is not always apparent whether or not federal assistance will be provided under the NDRF, there may be times when a FDRC is appointed despite no actual federal recovery assistance being provided. Disaster-impacted jurisdictions will likely focus their efforts on emergency response activities in the immediate hours and days following the disaster. These decisions are likely to influence long-term recovery. In disasters where a federal role may be necessary, a Federal Disaster Recovery Coordinator (FDRC) may be appointed simply to serve as a focal point for incorporating recovery and mitigation considerations into early decision-making processes. The FDRC will monitor the impacts and results of such decisions and evaluate the need for additional assistance and adjustments where necessary and feasible throughout the recovery. In such situations, while the status of an NDRF deployment hangs in the balance or when a deployment has yet to occur, the FDRC continues to work as a deputy to the Federal Coordinating Officer (FCO) for all matters concerning disaster recovery even in the absence of a larger federal recovery mobilization. The FDRC will facilitate disaster recovery coordination and collaboration between the federal, tribal, state and local governments, the private sector and voluntary, faith-based and community organizations. In these efforts, the FDRC partners with and supports the Local Disaster Recovery Manager (LDRM) and the State and/or Tribal Disaster Recovery Coordinator (SDRC/TDRC) in order to facilitate disaster recovery in the impacted areas.

When the disaster transitions from the JFO and the FCO is demobilized, the FEMA Regional Administrator (RA) may delegate to the FDRC any or all authorities typically delegated to an FCO, including the authority to coordinate disaster recovery, coordinate federal agencies to support local, state, tribal, territorial, and insular area recovery efforts, issue MAs, and sign interagency agreements (IAAs). Again, these delegated authorities are derived from the statutory authority granted to the FCO under the Stafford Act, the Post-Katrina Emergency Management Reform Act (PKEMRA), and other regulations.

During disasters that have not received a Presidential declaration, incidents guided by the National Oil and Hazardous Substances Pollution Contingency Plan, public health emergencies, or other wide-scale incidents with a strong need for recovery coordination, an FDRC may still be appointed. In such instances, the FDRC reports to the lead federal response official as they would the FCO in a Stafford Act event. The FDRC appointed for these non-Presidentially declared disasters will be a senior official from the agency with the lead role for that incident (except in certain situations where the lead federal agency requests that FEMA provides an FDRC). The roles and responsibilities of the FDRC in such circumstances remains substantially the same as Stafford Act events, and FEMA continues to support the FDRC's mission of integrating federal, local, state, tribal, territorial, insular area, private, nonprofit, and community recovery objectives.

The primary role of the FDRC is to serve as a central coordinator and leader for the federal recovery effort. They have the responsibility to build connections and access opportunities to existing federal programs that may be useful for addressing recovery challenges. The FDRC does not have the authority to direct the implementation of those programs—however they are able to activate the RSFs, they serve as the coordinating lead for RSF activities, and provide the leadership and direction to guide RSF recovery activities. To this end, the FDRC is able to mobilize staff from the National Disaster Recovery Support (NDRS) Cadre to assist in processing RSF activations and deployments and coordinating recovery impact assessments, to act as liaisons with regional recovery staff, Operations, and External Affairs (EA), and to support other critical mission activities. Once it is determined that NDRF assistance is required, a recovery support strategy is formulated.

The FDRCs have a pre-disaster role as well. Each regionally-assigned FDRC (reporting to his/her respective Regional Administrator or his/her designee) supports non-disaster activities to build interagency and intergovernmental recovery capacity and pre-disaster planning and coordination with other federal agencies. They also work with communities to apply the NDRF in preparation for disasters. And at the national and regional levels, FDRCs work in conjunction with RSF agency representatives to convene regular meetings between federal representatives and local, state, tribal, territorial, and insular area stakeholders, and coordinate planning technical assistance, as requested.

3. Federal Disaster Recovery Officer (FDRO)

When the NDRF was first released, the position of the FDRO did not exist. However, it was soon found that the FDRC required significant operational support during the recovery to major disasters. The FDRC has been given the authority to appoint an FDRO if they determine that such assistance is required based on the scale and complexity of the disaster. Once appointed, the FDRO is responsible for:

- a. Providing general operating support to the FDRC in executing the disaster recovery mission
- b. Coordinating the assessment processes
- c. Helping to administer the development and the of the Recovery Support

Strategy

4. FDRC Community Liaison

The FDRC is authorized to establish recovery liaisons, in coordination with state, tribal, or territorial recovery managers, to provide a central point of contact. Depending upon the organizational structure of the state's recovery efforts and the preferences of state officials, the liaison may work with single or multiple communities. This community liaison coordinates activities with other federal field operatives that are already deployed in the impacted area. If and how the FDRC utilizes FDRC Community Liaisons depends on the scope of the disaster and the size of the communities impacted. The role of the FDRC Liaison includes:

- a. Providing visibility for the FDRC and RSFs on local recovery issues and opportunities
- b. Providing a direct conduit between the RSFs and the communities
- c. Facilitating access to subject matter experts to participate in community planning
- d. Serving as a conduit for the coordination of RSF-related activities with Program Liaisons
- e. Coordinating with the LDRM

5. External Affairs (EA) Officer

The External Affairs (EA) Officer works in support of the FCO and FDRC to ensure that accurate and actionable information is shared with all external recovery stakeholders. This might include:

- a. The general public
- b. The media
- c. Local, state, tribal, territorial, and insular area partners
- d. The private sector
- e. NGOs
- f. Associations
- g. Members of Congress and their staff
- h. Others

During federal recovery support operations, all public information and communications is coordinated through ESF #15 (External Affairs, which supports all RSFs) of the National Response Framework. ESF #15 unifies federal external affairs support for all external affairs functional areas deployed to support an incident requiring a coordinated federal response. ESF #15 staff members develop the strategic communications and messaging plans and outreach strategies for disaster response and recovery.

6. Mitigation Advisor

Each time an FDRC is activated, FEMA assigns a Mitigation Advisor to deploy with them. This special advisor contributes subject matter expertise and knowledge about existing hazard mitigation plans and projects to improve the work of the FDRC and of the planning efforts underway. The Mitigation Advisor identifies threats and hazards while supporting local, state, tribal, territorial, and insular area decision makers in selecting lasting recovery solutions. Because disasters often present unique opportunities to take mitigation actions, the Mitigation Advisor works with each of the RSFs for the

duration of the deployment to ensure that risk reduction opportunities are exploited.

7. RSF Coordinators

a. RSF National Coordinator

Each RSF coordinating agency (CA) has designated an official to serve as the RSF National Coordinator. The RSF National Coordinator leads the RSF and supports ongoing communication and coordination between the Primary Agencies and support organizations for the RSFs that assist in recovery and provides additional resources. The RSF National Coordinator also assists the FDRC to support coordination and communication between the federal agencies and corresponding local, state, tribal, territorial, and insular area authorities, and nongovernmental and private sector organizations throughout the multiple phases of a disaster.

b. RSF Field Coordinator

RSF Field Coordinators serve as the federal point-persons for all RSF-related matters at the field level. RSF Field Coordinators are designated, in consultation with RSF primary and supporting agencies, on an operation-by-operation basis, by the RSF National Coordinator. When deployment is required, the RSF National Coordinator designates an RSF Field Coordinator to the JFO who is responsible for sharing Primary Agency and Supporting Organization information in support of community recovery efforts in the field.

The FDRC coordinates RSF Field Coordinator activities, and all RSF field deployed assets report to their respective Field Coordinator.

8. State, Tribal, and Territorial Disaster Recovery Coordinators (S/TDRCs)

The NDRF strongly recommends that State governors as well as local government and Tribal leaders prepare as part of their disaster recovery plans to appoint Local Disaster Recovery Managers (LDRMs) and State/Tribal Disaster Recovery Coordinators (SDRCs/TDRCs) to lead disaster recovery activities for the jurisdiction. The purpose of the LDRMs, SDRCs and TDRCs is to organize, coordinate and advance the recovery at the local, state or tribal level. These individuals are chosen on account of their experience and skill sets, which should include a strong basis in community development and good knowledge of the community's demographics. While these positions will often interact with the emergency management community, the NDRF states that it is not necessary that these individuals be emergency management professionals. In fact, their primary role is to manage and coordinate the redevelopment and building of community. The coordinators must be able to represent and speak on behalf of their respective chief executives (e.g., mayor, governor, Tribal leader), and the LDRMs and TDRCs typically serve as the jurisdiction's primary point of contact with the SDRC. In large-scale disasters and catastrophic incidents where a federal role may be necessary, the SDRC and/or the TDRC is the primary interface with the Federal Disaster Recovery Coordinator (FDRC).

9. The Advance Evaluation Team

The Advance Evaluation Team (AET) assists the FCO and/or the FEMA Regional Administrator in determining whether or not there is a need to

activate an FDRC and any of the six RSFs. The AET are also tasked with identifying anticipated interagency recovery resource coordination needs and other major recovery issues or challenges. The AET is a fast-acting unit composed of a small number of individuals with the relevant experience to appraise anticipated, incident-specific recovery challenges. The AET can also be called upon by the lead federal official to perform an FDRC-RSF needs assessment in the case of a non-Stafford Act incident.

10. Community Recovery Assistance Group

The Community Recovery Assistance Group works in partnership with local, state, tribal, territorial, and insular area governments, and FEMA programs. This group is staffed by personnel from FEMA's NDRS Cadre and works closely with the Community Planning and Capacity Building (CPCB) RSF to integrate CPCB partner planning and capacity resources into communities supported by the FDRC-RSF operation.

11. Recovery Coordination Group

This Recovery Coordination Group supports the FDRC and the RSFs by establishing and managing coordination structures with RSF Field Coordinators, FEMA Program Areas, governmental partners and the private sector. The Recovery Coordination Group is focused on supporting efficient coordination for the identification of resources, policies, and programs. When required, the NDRS Cadre is called upon to form this group.

a. Mission/Outreach Support Group

The Mission/Outreach Support Group supports the FDRC's effort to develop community approaches with local, state, tribal, territorial, and insular area partners. This group provides mission administrative support and manages all procurement and human resources activities and helps to coordinate Interagency Agreements and Mission Assignments. Like the Recovery Coordination Group, this group is staffed by members of the NDRS Cadre.

Within this structure, the FDRC works as a deputy to the FCO for matters concerning disaster recovery. The FDRC partners with and supports the SDRC/TDRC to establish strategic objectives, organize and coordinate initiatives, and to advance state recovery efforts. The FDRC coordinates all recovery activities and collaborates with the SDRC/TDRC. The SDRC/TDRC serve as the primary interfaces with the LDRMs to facilitate disaster recovery in the impacted area. In most cases, the FDRC coordinates with local communities through the SDRC/TDRC unless a different approach is agreed upon by the FDRC and SDRC. The FDRC and SDRC consult with, and are advised by, the RSF Field Coordinators. To ensure the maximum visibility of RSF operations and coordination, the RSF Field Coordinators are involved in all appropriate recovery mission decision making activities. While operationally reporting to the FDRC and in coordination with strategic objectives outlined in the RSS, the RSF Field Coordinators are expected to broker RSF field activities within their statutory or delegated authority. Each Field Coordinator works within the structures established in its respective RSF Annex for RSF intra-communication and decision making. The FDRC, SDRC/TDRC, and the RSF Field Coordinators

have direct access to and are informed by the Mitigation Advisor and/or other Program Liaisons. The FDRC may also call upon other subject matter experts to serve as Program Liaisons and provide additional advice or address stakeholder needs. The FDRO provides direct day-to-day operational support to the FDRC in executing the disaster recovery mission, coordinates mission scoping assessment (MSA) processes, and helps in managing the development of the RSS and its implementation. The FDRC-RSF Mission Support components work under the direction of the FDRC and manage various key functions. These components will support the FDRC and RSF activities as needed.

The FDRC-RSF management structure is designed to be scalable and adaptable to a wide range of disasters. The adaptable NDRF structure allows federal recovery support to be responsive to any scale disaster and a wide range of recovery needs. While select RSFs can be applied to address the narrower needs of a less complex disaster, a disaster of catastrophic scale will present multiple challenges and issues that would demand the full spectrum of RSF resources to be activated and deployed. In large part, establishing an appropriate management structure will be a function of the extent of recovery needs and the capacity of communities to meet those needs.

FEMA Recovery Assistance Programs

Once a disaster declaration has been made by the President, FEMA is authorized per the Stafford Act to begin providing financial assistance to those affected. Funding is provided through a number of programs, which include:

1. Individual Assistance (IA)
2. Public Assistance (PA)
3. Mitigation Grants

Eligibility for individual assistance is limited to those counties listed in the declaration (which can expand after the initial declaration as additional information is gathered or conditions change). Eligibility for the public assistance includes state, local, and tribal governments, and certain private non-profit organizations, that provide disaster assistance in the declared counties. Mitigation assistance is available to any county in a state that has received a declaration, regardless of whether the county itself was listed in the declaration.

FEMA's Individual Assistance Recovery Programs

Individual Assistance programs are oriented to individuals, families, and small businesses. The various programs foster recovery for the affected population by providing temporary housing assistance, grants to individuals and families, disaster unemployment assistance, legal services, and crisis counseling.

Applicants must first register for assistance and establish eligibility using either the www.disasterassistance.gov website, by visiting a disaster recovery center (which are set up in the impacted area once a declaration has been made), or by calling the FEMA toll-free number (1-800-621-FEMA). There are three national centers that provide centralized disaster application services for disaster victims, called National Processing Service Centers (NPSCs). The NPSCs are located in Denton, TX; Berryville, VA; and Hyattsville, MD. An automated system provides determination of eligibility for about 90% of Disaster Housing cases, usually within 10 days of application. The other 10% of cases, which may need documentation, take a little longer. Cases are also automatically referred to the state for possible grant assistance if the applicant's needs exceed the Disaster Housing program and the individual cannot qualify for a disaster loan from the Small Business Administration.

Affected populations are often unaware of the availability of assistance, and many do not apply. Following the Sep. 11 events, for instance, FEMA recognized that many eligible individuals and businesses had not sought help. Working with the Advertising Council and a volunteer ad agency Muezzin Brown & Partners, a public service advertising campaign was developed to let viewers know that assistance was available by calling FEMA's toll-free registration number. The advertisements were distributed to electronic and media outlets in New York, New Jersey, Connecticut, Pennsylvania, and Massachusetts.

The IA program includes the following types of assistance:

Disaster Housing Program

The Disaster Housing Program ensures that people whose homes are damaged by disaster have a safe place to live until repairs can be completed. These programs are designed to provide funds for expenses that are not covered by insurance and are available to homeowners and renters who are legal residents of the United States and who were displaced by the disaster.

- *Lodging expenses reimbursement* provides a check for reimbursement for the costs of short-term lodging such as hotel rooms that were incurred because of damage to a home or an officially imposed prohibition against returning to a home.
- *Emergency minimal repair assistance* provides a check to help repair a home to a habitable condition.

- *Temporary rental assistance* provides a check to rent a place for the pre-disaster household to live.
- *Mortgage and rental assistance* provides a check to pay the rent or mortgage to prevent evictions or foreclosure. In order to qualify, the applicant must be living in the same house before and after the disaster and have a documented disaster-related financial hardship that can be verified by FEMA.

Individuals and Households Program (IHP)

The Individuals and Households Program (IHP), which was formerly called the Individual and Family Grant (IFG) Program, provides funds for the necessary expenses and serious needs of disaster victims that cannot be met through insurance or other forms of disaster assistance. The IHP is not designed to cover all of a victim's losses (home, personal property, household goods) that resulted from the disaster, nor is it intended to restore damaged property to its condition before the disaster. Also, the IHP does not cover any business-related losses that resulted from the disaster. By law, the IHP cannot provide any money for losses that are covered by insurance.

IHP provides assistance for the following:

- *Temporary housing* (a place to live for a limited period of time). Money is available to rent a different place to live or a government-provided housing unit when rental properties are not available.
- *Repairs*. Money is available to homeowners to repair damage from the disaster that is not covered by insurance. The goal is to make the damaged home safe, sanitary, and functional.
- *Replacements*. Money is available to homeowners to replace their home destroyed in the disaster that is not covered by insurance. The goal is to help the homeowner with the cost of replacing their destroyed home.
- *Permanent housing construction*. This involves either direct assistance or money for the construction of a home. This type of help occurs only in insular areas or remote locations specified by FEMA, where no other type of housing assistance is possible.
- *Other needs*. Money is available for necessary expenses and serious needs caused by the disaster. This includes medical, dental, funeral, personal property, transportation, moving and storage, and other expenses that are authorized by law.

The IHP covers only repair or replacement of items that are damaged as a direct result of the disaster that are not covered by insurance. Repairs or rebuilding may not improve a victim's home above its pre-disaster condition unless such improvements are required by current building codes.

Housing Needs

Money to repair a home is limited to making the home "safe and sanitary" so the victim can continue to live there. IHP will not pay to return a home to its pre-disaster condition. Grants may be used for housing needs to repair the

following:

- Structural parts of the home (foundation, outside walls, roof)
- Windows, doors, floors, walls, ceilings, cabinetry
- Septic or sewage systems
- Wells or other water systems
- Heating, ventilating, and air conditioning system
- Utilities (electrical, plumbing, and gas systems)
- Entrance and exit ways from your home, including privately owned access roads
- Blocking, leveling, and anchoring of a mobile home and reconnecting or resetting its sewer, water, electrical, fuel lines, and tanks

Other Needs Assistance

Money to repair damaged personal property or to pay for disaster-related necessary expenses and serious needs is limited to items or services that help prevent or overcome a disaster-related hardship, injury, or adverse condition. Grants may be used to pay for the following:

- Disaster-related medical and dental costs
- Disaster-related funeral and burial cost
- Clothing, household items (room furnishings, appliances), tools (specialized or protective clothing and equipment) required for a job, necessary educational materials (computers, school books, supplies)
- Fuels for primary heat source (heating oil, gas, firewood)
- Cleanup items (wet/dry vacuum, air purifier, dehumidifier)
- Disaster-damaged vehicle
- Moving and storage expenses related to the disaster (moving and storing property to avoid additional disaster damage while disaster-related repairs are being made to the home)
- Other necessary expenses or serious needs as determined by FEMA

Money received from IHP for “housing” and “other” needs must be used for eligible expenses only, as identified by FEMA. If a grantee does not use the money for the reasons defined in the grant application, he or she may not be eligible for any additional help and may have to return any grant money provided. Grant money has the following features:

- Is usually limited to up to 18 months from the date the president declares the disaster
- Does not have to be repaid
- Is tax-free
- Is not counted as income or a resource in determining eligibility for welfare, income assistance, or income-tested benefit programs funded by the federal government
- Is exempt from garnishment, seizure, encumbrance, levy, execution, pledge, attachment, release, or waiver
- May not be reassigned or transferred to another person

FEMA pays 100% of the “housing” portion of the grant, and 75% of the

“other needs” portion. The state pays the remaining 25% of the “other needs” portion. The states may administer only the “other needs” portion of the grant. The total maximum amount of grant assistant for each family or individual is adjusted each year. In fiscal year 2016, the maximum amount was \$33,000, though some forms of assistance have lower limits.

Although some money often is made available through the IHP, most disaster aid from the federal government is provided in the form of loans from the Small Business Administration (SBA) that must be repaid. Applicants to IHP may be required to seek help from the SBA first before being considered for certain types of IHP help. The SBA can provide three types of disaster loans to qualified homeowners and businesses to repair or replace homes, personal property, or businesses that sustained damages not covered by insurance:

- *Home disaster loans* provide funds to homeowners and renters to repair or replace disaster-related damages to home or personal property
- *Business physical disaster loans* provide funds to business owners to repair or replace disaster-damaged property, including inventory and supplies
- *Economic injury loans* provide capital to small businesses and to small agricultural cooperatives to assist them through the disaster recovery period. If the SBA determines that the individual is ineligible for a loan, or if the loan amount is insufficient to meet the individual’s needs, then the applicant is referred to the IFG program

Disaster Unemployment Assistance

The Disaster Unemployment Assistance (DUA) program provides unemployment benefits and reemployment services to individuals who have become unemployed because of major disasters and who are not eligible for disaster benefits under regular unemployment insurance programs.

Legal Services

The Young Lawyers’ Division of the American Bar Association, through an agreement with FEMA, provides free legal assistance to low-income disaster victims. The assistance that the participating lawyers provide is for insurance claims; counseling on landlord/tenant problems; assistance in consumer protection matters, remedies, and procedures; and replacement of wills and other important legal documents destroyed in a major disaster. This assistance is intended for individuals who are unable to secure legal services adequate to meet their needs as a consequence of a major disaster.

Special Tax Considerations

Taxpayers who have sustained a casualty loss from a declared disaster may deduct that loss on their federal income tax return for the year in which the casualty occurred or through an immediate amendment to the previous year’s return. Businesses may file claims with the Bureau of Alcohol, Tobacco, and

Firearms (ATF) for payment of federal excise taxes paid on alcoholic beverages or tobacco products lost, rendered unmarketable, or condemned by a duly authorized official under various circumstances, including where a major disaster has been declared by the president.

Crisis Counseling

The Crisis Counseling Assistance and Training Program is designed to provide short-term crisis counseling services to people affected by a presidentially declared disaster. The purpose of the crisis counseling is to help relieve any grieving, stress, or mental health problems caused or aggravated by the disaster or its aftermath. These short-term services are provided by FEMA as supplemental funds granted to state and local mental health agencies. The American Red Cross, the Salvation Army, and other voluntary agencies, as well as churches and synagogues, also offer crisis counseling services.

Cora Brown Fund

Cora C. Brown of Kansas City, Missouri, died in 1977 and left a portion of her estate to the United States to be used as a special fund solely for the relief of human suffering caused by natural disasters. The funds are used to assist victims/survivors of presidentially declared major disasters for disaster-related needs that have not or will not be met by government agencies or other organizations.

Critical Thinking

- Do you think that FEMA's individual grant programs provide enough assistance to individuals and families that are affected by disasters?
- Should federal assistance programs be available to all disaster victims regardless of their income or net worth? Why or why not?

FEMA's Public Assistance Grant Programs

FEMA also supports disaster recovery conducted by or for the impacted communities. Through the Stafford Act, the Public Assistance (PA) Grant Program reimburses the work and incurred expenses of state and local governments and certain private nonprofit (PNP) organizations. These grants allow them to recover from the impact of disasters and to implement mitigation measures to reduce the impacts from future disasters. The grants are aimed at governments and organizations with the final goal to help a community and its citizens recover from devastating major disasters. The federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The state determines how the non-federal share is split with the applicants.

Eligible applicants include the states, local governments, and any other political subdivision of the state, Native American tribes, Alaska Native Villages, and certain PNP organizations. Eligible PNP facilities include educational, utility, irrigation, emergency, medical, rehabilitation, temporary or permanent custodial care, and other PNP facilities that are open to the public and provide essential services of a governmental nature to the general public. The work must be required as the result of the disaster, be located within the designated disaster area, and be the legal responsibility of the applicant. PNPs that provide critical services such as power, water, sewer, wastewater treatment, communications, or emergency medical care may apply directly to FEMA for a disaster grant. All other PNPs first must apply to the SBA for a disaster loan. If the loan is declined or does not cover all eligible damages, the applicant may reapply for FEMA assistance.

Work that is eligible for supplemental federal disaster grant assistance is classified as either emergency work or permanent work:

- *Emergency work* includes debris removal from public roads and rights-of-way as well as from private property when determined to be in the public interest. This may also include protective measures performed to eliminate or reduce immediate threats to the public.
- *Permanent work* is defined as work that is required to restore an eligible damaged facility to its pre-disaster design. This effort can range from minor repairs to replacement.

Program assistance is grouped according to seven distinct categories, each with its own rules and eligibility requirements. The seven categories include:

- Category A: Debris Removal
- Category B: Emergency Protective Measures
- Category C: Roads and Bridges
- Category D: Water Control Facilities
- Category E: Public Buildings and Contents
- Category F: Public Utilities
- Category G: Parks, recreational, and other facilities

Categories A and B are typically considered emergency work, while the

others are considered permanent.

As soon as possible after the disaster declaration, the state, assisted by FEMA, conducts the applicant briefings for state, local, and PNP officials to inform them of the assistance that is available and how to apply for it (Fig. 7.4). A Request for Public Assistance must be filed with the state within 30 days after the area is designated eligible for assistance. Combined federal, state, and local teams work together to design and deliver the appropriate recovery assistance for the communities (Fig. 7.5). In determining the federal costs for the projects, private or public insurance can play a major role. For insurable buildings within special flood hazard areas (SFHAs) and damaged by floods, the disaster assistance is reduced by the amount of insurance settlement that would have been received if the building and its contents had been fully covered by a standard NFIP policy. For structures located outside of an SFHA, the amount is reduced by the actual or anticipated insurance proceeds.



FIGURE 7.4 Prattsville, N.Y., Sep. 8, 2011—A FEMA Mobile Disaster Recovery Center (MDRC) is placed to assist residents after Hurricane Irene and Tropical Storm Lee passed through New York State. FEMA plays a vital role supporting state, tribal and local governments as they respond to the impacts of Hurricane Irene. Photo by Elissa Jun/FEMA.



FIGURE 7.5 Cherokee, North Carolina, Mar. 12, 2013—Walt Kruski, a FEMA Public Assistance specialist answers questions from participants at the first kickoff meeting for the Eastern Band of the Cherokee Indians (ECBI) officials.

FEMA is working with representatives of the ECBI and the State of North Carolina to assist with road and other public work projects that were damaged during a severe weather incident earlier in the year. Photo by Patsy Lynch/FEMA.

In 1998, FEMA redesigned the Public Assistance program to provide money to applicants more quickly and to make the application process easier. The redesigned program was approved for implementation on disasters declared after Oct. 1, 1998. This redesigned program placed new emphasis on people, policy, process, and performance. The focus of the program was also modified to provide a higher level of customer service for disaster recovery applicants and to change the role of FEMA from inspection and enforcement to an advisory and supportive role.

In Dec. 2008, the US General Accounting Office (GAO) released an evaluation of FEMA's Public Assistance program's activities in helping to rebuild the Gulf Coast in the aftermath of the 2005 hurricanes that devastated numerous communities along the Gulf Coast. The GAO report raised a number of issues concerning current Public Assistance program activities principally in the areas of program development, information sharing and tracking, project approval and appeals, and human capital. A copy of this report can be found at US Government Accountability Office, Dec. 2008. "Disaster Recovery: FEMA's Public Assistance Grant Program Experienced Challenges in Gulf Coast Rebuilding." <http://bit.ly/29aYQhu>.

In the aftermath of Hurricane Sandy, a series of legislative actions were taken that impact both FEMA's IA and PA programs. The Congressional Research Service undertook a complete analysis of all of the legislation that was passed. A brief summary of this report was mentioned in [Chapter 1](#), The Historical

Context of Emergency Management of this book and is repeated below as well as the source to access the complete analysis and report.

The Disaster Relief Fund

FEMA disaster assistance is paid out of the Disaster Relief Fund (DRF), a line item on the Department of Homeland Security annual budget within the FEMA-designated budget area. The DRF is funded through the annual appropriations process. Prior to FY2012, Congress determined the amount to add to the DRF (which is a “no-year” budget account, meaning it does not expire at the end of the fiscal year, as is the case with most federal budget items) by taking the average of the previous 5 years’ “normal” disaster costs (calculated in light of remaining funds in the DRF, pending recovery costs, and any likely return of unobligated funds.) This means that large-scale events, like Hurricane Katrina, are not included in the calculation. But given that these large-scale disasters are becoming more common, it is also more common for the DRF to run out of funds well before the year has ended. Today, the process is similar, but a 10-year rolling average is used rather than the previous 5-year average. Using the former formula, the DRF was funded between FY2002 and FY2011 at levels totaling approximately \$1.9 billion per year. With large-scale disasters included, the actual disbursement rate during that period was \$4.2 billion per year, which shows the problem caused by failing to include all disaster events. The DRF could not function, therefore, without emergency supplemental funding added whenever large-scale events tapped all remaining funds. Some years, multiple supplemental appropriations were needed to satisfy recovery funding requirements. The Congressional Research Service (2016) Between 1996 and 2016, there were 16 disasters that received Presidential Disaster Declarations for which the DRF expended over \$500 million (see [Table 7.1](#)). These are the events that are not included in the calculation of “normal” years. There is pressure to begin including these events given their rising frequency and their large influence on the rolling average.

Analysis of the Sandy Recovery Improvement Act of 2013

Hurricane Sandy caused extensive human suffering and damage to public and private property. In response to this catastrophic event, Congress considered legislation to provide supplemental appropriations to federal disaster assistance programs. In addition, Congress considered revisions to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act, P.L. 93-288 as amended), which is the primary source of authorities for disaster assistance programs for FEMA. As a result, Congress passed the Sandy Recovery Improvement Act of 2013, which was included as Division B of the Disaster Relief Appropriations Act, 2013 (P.L. 113-2). Division A of P.L. 113-2 provided a \$50.7 billion package of disaster assistance largely focused on responding to Hurricane Sandy. Additionally, Congress increased the National Flood Insurance Program’s borrowing authority by \$9.7 billion (from \$20.725

billion to \$30.425 billion) (P.L. 113-1). Both of these supplemental relief laws are discussed separately in CRS Report R42869, FY2013 Supplemental Funding for Disaster Relief. This report analyzes the provisions of the Sandy Recovery Improvement Act of 2013. In general, these provisions amend the Stafford Act with a stated goal of improving the efficiency and quality of disaster assistance provided by FEMA. Briefly, the amendments to the Stafford Act include:

- Establishing a new set of alternative procedures for administering the Public Assistance Program, which provides assistance for debris removal and the repair and restoration of eligible facilities (Section 1102 of the Sandy Recovery Improvement Act of 2013)
- Authorizing FEMA to enter into agreements with private owners of multifamily rental properties to expand post-disaster housing resources (Section 1103)
- Revising the administration of the Hazard Mitigation Grant Program to include a possible advancement of 25% of grant funds (Section 1104)
- Directing the establishment of alternative dispute resolution procedures (including binding arbitration), building on FEMA's current appeals process, to resolve federal and state disagreements on costs and eligibility questions (Section 1105)
- Directing the creation of a joint process for environmental and historical review for disaster recovery projects with the goal of increasing the speed of the process (Section 1106)
- Directing FEMA to study, and report to Congress, whether it is appropriate to increase the dollar size of "small projects" eligible for simplified procedures (Section 1107)
- Including child care as an eligible expense under the "other needs assistance" provided in certain disasters (Section 1108(a))
- Specifically authorizing the reimbursement of the base wages of government employees providing emergency work under certain circumstances (Section 1108(b))
- Directing FEMA to update the factors considered when assessing the need for individual assistance in the declaration process (Section 1109)

Source: Congressional Research Service. 2013. Analysis of the Sandy Recovery Improvement Act of 2013. <http://bit.ly/29fYsjJ>.

Additional Research

A Guide to Disaster Assistance and Relief Funding: How to Navigate the Disaster Assistance Process, compliments of US Senator Kirsten Gillibrand, New York, Dec. 18, 2012. Dec. 18, 2012. <http://bit.ly/2eIr56Y>.

Case Study: New York City Hurricane Sandy Recovery Program

Following Hurricane Sandy, New York City established a host of programs to lead the recovery effort at the local governmental level. Some of these

programs were established to manage and administer federal funds but most of these programs are being supplemented by state and local funds. New York, of course, is an anomaly in terms of its fiscal assets. While it was impacted by the recession, its tax base has been restored and it has the ability to contribute local funds to recovery. In addition, the political strength of the New York congressional delegation has assured that the city will receive top priority for federal funding. But for the purpose of this report, identifying the types of programs that a local government could establish in a post-disaster situation is informational.

- **New York City Rapid Repairs Program:** This program supports teams of contractors and city inspectors who travel into Hurricane Sandy-impacted neighborhoods to make necessary repairs to damaged homes.
- **New York City Business Recovery Resources Emergency Loans for small to midsize businesses:** Emergency loans for businesses were made available in the aftermath of the hurricane and patterned after similar programs deployed in past emergencies. Loans were capped at \$25,000. Each emergency loan was the sum of costs for replacement/repairs to facilities or equipment and/or the working capital needed to restart or continue business operations (up to \$25,000). The emergency loan program is for independently owned and operated businesses paying taxes in New York City and nonprofit organizations that:
 - Are located in New York City
 - Have fewer than 100 employees
 - Filed 2011 business tax returns
 - Have experienced business interruption and/or damages as a result of Superstorm Sandy
- **Hurricane Emergency Sales Tax Exemption Program (HESTEP):** In response to Hurricane Sandy's impact on New York City businesses, the New York City Industrial Development Agency provided emergency assistance to small businesses by establishing the Hurricane Emergency Sales Tax Exemption Program ("HESTEP"). This program provides sales tax exemptions of up to \$100,000 for each affected company on purchases of building, construction and renovation materials, machinery and equipment, and other items of personal property, and related services needed to rebuild after the storm.
- **Matching Grant Program:** Up to a \$10,000 matching grant has been made available for New York City businesses most impacted by the hurricane. In total, \$5.5 million in matching grants were made available for businesses that were displaced from their workplace for 3 weeks. The grants are designed to provide critical supplemental assistance to what is being provided through low-interest loans, and are capped at no more than the amount the business receives in loans.

Table 7.1
Disasters Requiring \$500 Million or More from the DRF

Year	Event	Cost
1996	Hurricane Fran	\$600,000,000
1998	Hurricane Georges	\$2,170,000,000
1999	Hurricane Floyd	\$1,030,000,000
2003	Hurricane Isabel	\$600,000,000
2004	Hurricane Charley	\$1,990,000,000
2004	Hurricane Frances	\$1,800,000,000
2004	Hurricane Ivan	\$2,380,000,000
2004	Hurricane Jeanne	\$1,690,000,000
2005	Hurricanes Katrina, Rita, and Wilma	\$50,550,000,000
2008	Hurricane Gustav	\$2,040,000,000
2008	Hurricane Ike	\$5,490,000,000
2008	Midwest Floods	\$2,580,000,000
2011	Hurricane Irene	\$2,340,000,000
2012	Hurricane Isaac	\$900,000,000
2012	Hurricane Sandy	\$11,970,000,000
2013	Colorado Storms, Flooding, Landslides, and Mudslide	\$630,000,000

Source: CRS. 2016. An Examination of Federal Disaster Relief Under the Budget Control Act. R42352.
<http://bit.ly/29bqDN4>.

Other Federal Agency Disaster Recovery Funding

Other federal agencies have programs that contribute to social and economic recovery. Most of these additional programs are triggered by a presidential declaration of a major disaster or emergency under the Stafford Act; however, the secretary of agriculture and the administrator of the SBA have specific authority relevant to their constituencies to declare a disaster and provide disaster recovery assistance. All the agencies are part of the structure of the NRP. This section does not provide a complete list of all disaster recovery programs available after a disaster declaration, but it provides a summary of many of the federal agencies in addition to FEMA that provide disaster recovery programs. These agencies include the following:

- US Army Corps of Engineers
- Department of Housing and Urban Development
- Small Business Administration
- US Department of Agriculture
- Department of Health and Human Services
- Department of Transportation
- Department of Commerce
- Department of Labor

A more comprehensive list is available in the Catalog of Federal Domestic Assistance (CFDA), which is available through the Federal Assistance Programs Retrieval System. Each automated edition is revised in Jun. and Dec.

US Army Corps of Engineers

In a typical year, the US Army Corps of Engineers responds to more than 30 presidential disaster declarations, plus numerous state and local emergencies. Under the NRP, the Corps has the lead responsibility for public works and engineering missions. For example, after the events of Sep. 11, 2001, the Corps provided technical assistance for the debris removal operation. By Dec. 2001, more than 661,430 tons of debris had been moved to the Staten Island landfill.

Department of Housing and Urban Development

The Department of Housing and Urban Development (HUD) provides flexible grants to help cities, counties, and states to recover from presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. When disasters occur, Congress may appropriate additional funding for the Community Development Block Grant (CDBG) and HOME programs to rebuild the affected areas and bring crucial seed money to start the recovery process. Because it can fund a broader range of recovery activities than most other programs, CDBG disaster recovery assistance supplements recovery

assistance from FEMA and helps communities and neighborhoods that otherwise might not recover because of limited resources.

The CDBG program funds have been especially useful to communities that are interested in incorporating mitigation into their recovery process. These funds have been combined with FEMA assistance to remove or elevate structures from the flood plain and to relocate residents and businesses to safer areas.

The HOME Program helps expand the supply of decent, affordable housing for low- and very-low-income families by providing grants to states and local governments. Funds can be used for acquisition, new construction, rehabilitation, and tenant-based rental assistance. HOME disaster recovery grants are an important resource for providing affordable housing to disaster victims.

Small Business Administration

The Small Business Administration (SBA) Disaster Loan Program offers low-interest loans to assist in long-term recovery efforts for those who are trying to rebuild their homes and businesses in the aftermath of a disaster. Disaster loans from the SBA help homeowners, renters, businesses of all sizes, and nonprofit organizations fund rebuilding efforts. The SBA Disaster Loan Program reduces federal disaster costs compared to other forms of assistance such as grants, because the loans are repaid to the US Treasury.

The SBA can approve loans only to applicants who have a reasonable ability to repay the loan and other obligations from earnings. The terms of each loan are established in accordance with each borrower's ability to repay. Generally, more than 90% of the SBA's disaster loans are made to borrowers without credit available elsewhere and have an interest rate of around 4%. The disaster loans require borrowers to maintain appropriate hazard and flood insurance coverage, thereby reducing the need for future disaster assistance.

The SBA is authorized by the Small Business Act to make two types of disaster loans: physical disaster loans and economic injury disaster loans. Physical disaster loans are a primary source of funding for permanent rebuilding and replacement of uninsured disaster damages to privately owned real and/or personal property. Economic injury disaster loans provide necessary working capital until normal operations resume after a physical disaster.

In Fiscal Year 2015 (Oct. 1, 2014 to Sep. 30, 2015), the SBA approved 11,400 disaster loans for \$371.6 million, and participated in 255 active disaster declarations. In addition to ongoing disaster loans from previous years, the SBA maintained a portfolio of \$6.3 billion in disaster loans. Since the inception of the program in 1953, the SBA has approved more than 2 million disaster loans for more than \$53.8 billion. In the aftermath of Hurricanes Katrina, Rita, and Wilma in 2005, the SBA approved 160,805 disaster loans totaling \$10.9 billion. In 2001, after 9/11, the SBA approved more than \$526 million in low-interest loans to more than 5,300 applicants for home repairs, business loans, and loans to assist small businesses suffering economic injury as a result of losses caused by the

disaster ([SBA, 2016](#)).

Case Study: Cedar Rapids Business Case Management Program

In 2008, Cedar Rapids experienced more than \$6 billion in damages to businesses, housing, and the city's infrastructure, making this the fifth largest disaster in US history. A business grassroots organization, the Cedar Rapids Small Business Recovery Group, was created within days of the flood crest and quickly created a unified voice for the business community¹. The group's leaders served on the Chamber's Flood Recovery Committee, including its chair. It was this group that identified the need for the creation of a Business Case Management Program.

The Business Case Management Program, which was implemented in 2010, is the first of its kind. The program was established to provide direct one-on-one assistance to flood affected businesses. It was initially supported by state funding, but federal funding was secured as the program expanded. Over a 2-year period of time, the Case Management Team of business professionals reached out to 1230 businesses to determine their flood status and recovery needs. This program improved the survival rate of businesses compared to national statistics at the 3-year mark.

Endnote

1. The number of affected businesses included: 943 Businesses with Overland Water (757 at ground level and 186 upper floors); 81 Businesses fringe to flood area (power/steam loss, sewer back-up, etc.); 173 businesses closed. More than 2500 jobs were lost.

US Department of Agriculture

The US Department of Agriculture (USDA) Farm Service Agency (FSA) provides low-interest loan assistance to eligible farmers and ranchers to help cover production and physical losses in counties declared as disaster areas by the president or designated by the Secretary of Agriculture. The emergency loans can be used to restore or replace essential physical property, pay all or part of production costs associated with the disaster year, pay essential family living expenses, reorganize the farming operation, and refinance debts.

Department of Health and Human Services

The Department of Health and Human Services (DHHS) is the lead federal agency responsible for implementing the health and medical portion of the NRP. Their activities provide support to individuals and communities affected by disasters, state and local mental health administrators, and other groups that respond to those affected by human-caused disasters (such as school violence). The Center for Mental Health Services (CMHS) within the DHHS works with

FEMA to implement the Crisis Counseling Assistance and Training Program discussed earlier in this chapter.

The DHHS also provides disaster assistance for older Americans through its Administration on Aging (AoA). Older people often have difficulty obtaining necessary assistance because of progressive physical and mental impairments and other frailties that often accompany aging. Many older people who live on limited incomes, and are sometimes alone, find it impossible to recover from disasters without special federal assistance services. The AoA's national aging network assists older persons by providing critical support such as meals and transportation, information about temporary housing, and other important services on which older adults often rely.

Department of Transportation

Congress authorized a special program from the Highway Trust Fund for the repair or reconstruction of federal-aid highways and roads on federal lands that have suffered serious damage as a result of natural disasters or catastrophic failures from an external cause. The Department of Transportation (DOT) Federal Highway Administration (FHWA) administers the Emergency Relief Program, which supplements the commitment of resources by states, their political subdivisions, or other federal agencies to help pay for damages resulting from disasters. The applicability of the program to a natural disaster is based on the extent and intensity of the disaster.

Department of Commerce

Within the Department of Commerce, the Economic Development Administration (EDA) administers programs and provides grants for infrastructure development, business incentives, and other forms of assistance designed to help communities alleviate conditions of substantial and persistent unemployment in economically distressed areas and regions. The EDA provides post-disaster economic assistance for communities affected by declared natural disasters. Funding for this program has been a problem over the years.

Department of Labor

The Department of Labor (DOL) Disaster Unemployment Assistance (DUA) program provides financial assistance to individuals whose employment or self-employment has been lost or interrupted as a direct result of a major disaster and who are not eligible for regular state unemployment insurance. Funding for this program comes from FEMA. The DUA is administered by the state agency responsible for providing state unemployment insurance.

The Workforce Investment Act of 1998 authorizes the US Secretary of Labor to award National Emergency Grants to assist any state that has suffered an emergency or major disaster to provide disaster relief employment. These funds

can be used to finance the creation of temporary jobs for workers dislocated by disasters to clean up and recover from the disaster and to provide employment assistance to dislocated workers. Interestingly, in creating this program, Congress expanded eligibility beyond people affected by the disaster to dislocated workers and certain civilian Department of Defense employees affected by downsizing and certain recently separated members of the armed forces.

National Voluntary Relief Organizations

Many voluntary organizations and nongovernmental organizations (NGOs) are involved in disaster recovery. These organizations help individuals to get back on their feet in the immediate aftermath of a disaster event by providing food, shelter, medicine, and clothing. These groups also provide long-term assistance in many areas such as housing repair and rebuild, childcare, and assistance in accessing government relief. After Hurricane Katrina, a voluntary agency provided case management services to individual Katrina victims. For the most part, voluntary agencies and NGOs address the unmet needs of individuals that government relief programs do not cover (Fig. 7.6).



FIGURE 7.6 Vilonia, AR, May 21, 2014—Team Rubicon volunteers remove debris from a home and property in Parkwood Meadows near Naylor Road after the home was destroyed by a tornado on Apr. 27. FEMA supports Voluntary Organizations Active in Disaster (VOAD) as they help survivors recover from natural disasters. Photo by Christopher Mardorf/FEMA.

National Voluntary Organizations Active in Disaster (NVOAD)

National Voluntary Organizations Active in Disaster (NVOAD) coordinates planning efforts by many voluntary organizations responding to disaster in order to provide a more effective service to people affected by disaster.

Members include 58 national voluntary organizations that are active in disaster mitigation and response, 56 state and territorial chapters (VOADs), and dozens of local organizations. Once a disaster occurs, NVOAD or an affiliated state VOAD encourages members and other voluntary agencies to convene on site. The member organizations provide a wide variety of disaster relief services, including emergency distribution services, mass feeding, disaster childcare, mass or individual shelter, comfort kits, supplementary medical care, cleaning supplies, emergency communications, stress management services, disaster assessment, advocacy for disaster victims, building or repair of homes, debris removal, mitigation, burn services, guidance in managing spontaneous volunteers, and victim and supply transportation. NVOAD maintains a close relationship with FEMA and encourages the state and local affiliates to work closely with the state and local emergency management agencies.

The American Red Cross

Although the American Red Cross is not a government agency, its authority to provide disaster relief was formalized when, in 1905, the Red Cross was chartered by Congress to “carry on a system of national and international relief in time of peace and apply the same in mitigating the sufferings caused by pestilence, famine, fire, floods, and other great national calamities, and to devise and carry on measures for preventing the same.” Red Cross disaster relief focuses on meeting people’s immediate emergency disaster-caused needs and provides disaster assistance to individuals to enable them to resume their normal daily activities independently. The Red Cross provides shelter, food, and health and mental health services to address basic human needs. The Red Cross also feeds emergency workers, handles inquiries from concerned family members outside the disaster area, provides blood and blood products to disaster victims, and helps those affected by disaster to access other available resources.

The Red Cross is one of the nongovernmental organizations included in the NRP and is designated a support agency for ESF #6, Mass Care, Housing, and Human Services. The Red Cross helps coordinate the use of federal mass care resources in a presidentially declared disaster or emergency, and works closely in support of state and local efforts to meet the mass care needs of victims of a disaster. This federal assistance supports the delivery of mass care services of shelter, feeding, and emergency first aid to disaster victims; the establishment of systems to provide bulk distribution of emergency relief supplies to disaster victims; and the collection of information to operate a Disaster Welfare Information system to report victim status and assist in family reunification.

Recovery Planning Tools

Despite the pressures on politicians and community leaders to return to a period of normalcy as quickly as possible, and because of federal incentives, public interest, and insurance retractions, more and more communities are looking at ways to reduce their future vulnerability. As disasters repeat themselves and the public sees the emotional and financial benefits of mitigation, communities are making the long-term investment in mitigation. For example, the devastating 1993 Midwest floods that occurred again in some areas in 1995 had a minimal impact in those towns where buyout and relocation programs were undertaken after the 1993 flood. The following is a partial list of policy areas and tools that should be considered by decision makers as they develop their recovery plan:

- *Land-use planning techniques*, including acquisition, easements, annexation, storm water management, and environmental reviews
- *Zoning*, including special-use permits, historic preservation, setbacks, density controls, wetlands protection, floodplain, and coastal zone management
- *Building codes*, including design controls, design review, height and type, and special study areas (soil stability ratings)
- *Financial*, including special districts, tax exemptions, special bonds, development rights, property transfer, or use change fees
- *Information and oversight*, including public awareness and education, regional approaches and agreements, global information systems, town hall meetings, and public hearings

Most agree that one of the critical factors in a successful recovery is local leadership. A clear common vision, a well-defined plan, the active participation of the community—especially the business community—financial resources, and a good functioning partnership with federal, state, and local levels all make a difference in an effective and swift recovery. But leadership is the absolute key. City Administrator Steve Hewitt led his community of Greensburg, Kansas back from a devastating tornado in 2008 and was named municipal leader of the year by *American City and County* magazine for turning that community into a model green community that is more economically vital now than it was before the disaster hit. Cedar Rapids, Iowa is another example of outstanding leadership by both elected officials and the business community.

Across the Midwest, the Public Finance Authority was created in the aftermath of a series of floods in 2008 and 2010.

Public Finance Authority (PFA) is a unique government entity established to issue tax-exempt conduit bonds for public and private entities nationwide. PFA is sponsored by the National Association of Counties, the National League of Cities, the Wisconsin Counties Association, and the League of Wisconsin Municipalities. PFA partners with private borrowers and local governments to provide tax-exempt financing for public benefit projects. These projects are credited with creating temporary and permanent jobs, affordable housing, community infrastructure, and improving the overall quality of life in local

communities.

The Midwestern Disaster Area Bonds (MDAB) program was established under the PFA to support communities in the aftermath of the floods of 2008.

MDABs may be used for the following purposes:

1. Acquisition, construction, reconstruction, or renovation costs of nonresidential real property for "eligible loss or replacement business"
2. Multi-family residential rental projects for low and moderate income individuals
3. Repair or reconstruction of public utility property damaged by severe storms, tornados, or flooding during the period of May 20, 2008 to Aug. 1, 2008.

In every case where we see innovation at work, it is almost always a partnership of elected officials and the business community, determined to bring their communities back and to build back better.

Interest in long-term recovery planning has increased in the aftermath of Hurricane Katrina. It has been suggested that long-term recovery planning at the community level should be conducted prior to the next disaster instead of after the next disaster strikes as has been done in the past. One method for conducting community long-term recovery planning is presented below.

Pre-Disaster Recovery Planning

The range of actions that a community performs prior to the onset of a disaster, inclusive of the creation of comprehensive, structured strategies, frameworks, or plans, is collectively termed pre-disaster recovery planning (PDRP), or less frequently, Pre-Event Planning for Post Event Recovery (PEPPER). Like all planning, a great amount of intrinsic value is derived not just from the existence of planning documents themselves, but more importantly from the planning process itself.

This process helps to instill among planning participants a much greater appreciation of the hazards that threaten the community, and it allows stakeholders to gain a much greater awareness of the different resources, capabilities, strengths, and weaknesses that are possessed by or available to the individuals and entities that collectively make up the community. The complexity of the recovery needs of the greater community of stakeholders, which typify the longer-term recovery period that follows immediate disaster response and short-term recovery, make the planning process associated with pre-disaster recovery planning unique—even more so than any other type of planning associated with municipal emergency management.

As such, it is vital that sufficient time for deliberation, appreciation, and growth be allotted as only exist in ‘peace-time’ when no actual disasters are present. It is this non- or mildly-constrained planning context that not only enables the identification of the wider community of individuals involved, but also equips each stakeholder with the requisite knowledge and skills required in those early days following a disaster when planning decisions are monumental to the sustainability of the community. Communities benefit from the opportunity to consider issues such as: risk-reduction priorities; vulnerability-reduction measures; suitable locations for debris disposal; establishment of contracts with building inspectors, construction-affiliated businesses, technicians, suppliers, and other contract specialists; identification of safe, viable locations for interim housing; establishment of procedures to suspend or rewrite development rules and regulations; or establishment of coordination and decision-making structures and procedures.

Benefits of Pre-Disaster Recovery Planning

• Raising Awareness

Perhaps the most simple benefit of pre-disaster recovery planning is that it raises the awareness of community recovery stakeholders of the complex demands of post-disaster recovery. Many or even most recovery stakeholders may be unfamiliar with the recovery requirements that present in the aftermath of a disaster. For instance, they may not understand that the community will face building moratoria, which prevents immediate reconstruction of destroyed buildings. Or perhaps they are unaware of the significant debris clearance, removal, and processing requirements that often

preclude reconstruction following hurricanes and earthquakes. By conducting pre-disaster recovery planning, participants can benefit from the increased time available to become familiar with the issues that shape recovery options in the post-disaster setting.

- **Building Relationships**

Disasters bring together many individuals and organizations that do not otherwise work together. These include stakeholders in all sectors, including the private sector, nongovernmental organizations, local, state, tribal, territorial, and federal government agencies, faith-based organizations, and others. Planning benefits greatly whether there exists a familiarity between each of the different stakeholders, which can differ with regards to their goals and objectives, capabilities, philosophies and cultures, and more.

The nature of these relationships is what guides the creation of coordination structures, which are vital to the post-disaster decision-making processes.

- **Instituting New Statutes, Laws, and Policies**

Oftentimes, those laws and statutes that exist cannot account for the scale or the scope of demands, the need to address new information regarding vulnerability and risk, or the mechanisms by which government agencies provide assistance (disaster-related or otherwise) to constituents. The issuance of building permits is just one of the many areas wherein standard statutes, policies, and laws can fall short during the unique circumstances that exist in the aftermath of a disaster. A recovery and reconstruction ordinance that contains provisions pertaining specifically to governing needs expected to exist in the lead-up to, onset of, or aftermath of a disaster is an example. If it is likely that special governing or law enforcement powers will be required in the period of long-term recovery, these certainly merit study and deliberation. For instance, the power to issue a building moratorium may not be explicitly defined in existing local ordinances or state laws. A community can use the benefit of time during non-disaster times to better understand many of the issues that drive an issuance of a moratorium (such as who needs to issue the moratorium order, or how long a moratorium must be in effect before it must be extended). Regulatory frameworks can be established to ensure that post-disaster recovery and reconstruction planning and operations are conducted in a manner that is responsible and sustainable. Oftentimes these frameworks are only put in place after a disaster has occurred. Moratoria may be instituted in order to slow down the building process while regulatory needs are assessed. This process is vital, but at the same time slows down the recovery process considerably. By having regulatory structures in place prior to the onset of disaster, communities help to ensure that all entities engaged in recovery are able to more quickly understand the bounds within which they must design and cite their buildings or other structures, and the limits they face in determining use. Reimbursement and funding mechanisms to support recovery fall within the broad category of ordinances, laws, and policies. Communities need to have in place the ability to pay for longer-term recovery that is not financed by federal and state disaster assistance, by insurance, or other means, or that

which will be covered by one or more of these mechanisms but for which payment may be delayed. And finally, there should be procedures in place to ensure accountability for all actions and decisions taken in support of LTCR. The stakeholders involved in recovery planning are diverse yet are also typically representative of the community as a whole. Recovery stakeholders need to ensure that their work is transparent and accountable such that auditing will be able to track and verify that all actions are fair, just, and made in a manner compliant with all applicable authorities and regulations.

- **Capacity Building**

Recovery planning requires a great amount of capacity. This might include skills and/or resources related to damage and needs assessment, construction and contracting, building inspection or structural engineering, urban and regional planning, and more. Community planners may not know with any degree of accuracy how much capacity they have to manage long-term recovery needs, especially if they have not been faced with a major disaster in their recent history. Through the planning process, the recovery capacity requirements are discovered, and capacity itself may be inventoried. This will provide knowledge about any gaps that exist, thereby permitting the community to prioritize and address those gaps prior to the onset of disasters. For instance, many communities find that there are insufficient inspectors to certify that buildings are able to support occupancy after a major disaster such as an earthquake. The community must therefore draw inspectors from outside of the community to deal with the drastic increases in demand that exist. By creating rosters of inspectors, or any other official whose job roles are likely to become critical during recovery, the community will decrease or perhaps eliminate capacity shortfalls. The ability to meet these increased demands is typically referred to as surge capacity.

- **Consensus Building**

Pre-disaster recovery plans can help to build the programs and processes that enable planners to gather representative input from across the full range of community stakeholders. Not only does this help to ensure that recovery is fair and just, it also helps to ensure that it is demand-driven. Even if communities have a full appreciation of their populace, including their populations traditionally considered ‘vulnerable’, they may not understand how these vulnerabilities place individuals at a special disadvantage during times of disaster recovery, including longer-term recovery where such needs might not be readily apparent. In the pre-disaster period, when all groups, including those which may have special or considerable vulnerabilities in the aftermath of a disaster, are able to participate in the planning process and can communicate their anticipated needs and their obstacles for recovery. In doing such, the community increases the likelihood that the actions prescribed by a recovery plan generated in the aftermath of the disaster will be acceptable to all or most constituents given that these overarching issues were ironed out prior to disaster onset.

Pre-disaster recovery planning is listed among the nine core recovery

principles described by the NDRF. It is considered critical to maximizing recovery success in disaster-impacted communities. The Framework explains that:

The speed and success of recovery can be greatly enhanced by establishing the process and protocols prior to a disaster for coordinated post-disaster recovery planning and implementation.

FEMA (2011).

As was previously explained, it is a common yet misguided belief that disaster recovery begins when response or relief operations are winding down, or that it begins at the moment the disaster happens. In reality, it begins much earlier as there are a great number of important and time consuming issues that merit a great deal of study and attention. But once a disaster happens, time becomes constrained, and priorities begin to conflict. Disaster response planning, for instance, need not wait until the onset of disaster. Strategies and frameworks are established and practiced. When disasters occur, incident action plans are drawn up as dictated by the specific needs of the situation.

Consider how pre- and post-disaster recovery planning differ. Perhaps the most important distinction is that pre-disaster recovery planning is conducted in a hypothetical environment, in light of anticipated needs rather than any actual ones. As such, planners need to be able to imagine a more comprehensive, all-encompassing range of needs that might arise in any or all disasters, or perhaps only one specific type of disaster. Oftentimes a community will elect to use a qualifier other than 'Plan' to describe the outcome of their planning efforts. The terms 'Strategy' and 'Framework' are the most commonly encountered. A plan is a series or list of specific steps that are taken in pursuit of a goal. By implementing a plan, an entity or organization identifies what needs to be done, who does it, how they do it, as well as when and where. On the other hand, a strategy considers one additional factor—why different actions should be done. Through strategy development, overarching goals are identified, and community preferences are presented as dictated through careful study and wide collaboration that ultimately represents a wide basis of thought and agreement. Generally, it is the existence of a strategy that leads to the community's ability to effectively plan. In fact, it is the strategy that tells those tasked with planning in the time-constrained post-disaster environment what their bounds are, and what goals their efforts should be pursuing or adhering to.

It is often said that the strategy thinks bigger than the plan, and it has a larger scope as it is not limiting its outcomes to any one event or hazard. By developing a strategy, the community must look at many different possible end results, understanding that there is not likely to be any single event that draws upon each of the different paths to recovery that are defined. Strategies consider different factors that will influence actions and decisions, and discuss them in terms of the community's preferences, their costs, their feasibility, and any associated benefits. The strategy is blind to the specifics, unlike the plan, which

is meant to address concrete needs. A framework is also different from a strategy in that it provides the structure in which planning and action can take place, but does not prescribe specific actions that may be taken to address the recovery planning needs themselves.

Like response, recovery is a process that is performed within a time-constrained setting in which victims' lives hang in the balance. To be performed well, recovery and response require special skills, equipment, resources, and personnel. Unlike more immediate relief and response needs, most communities lack the in-place capacity to address the longer-term reconstruction associated with recovery. In the absence of procedures, strategies, policies, and other aspects of organizational capacity, recovery quickly becomes marked by confusion and mistakes, as well as mismanagement and inefficiency. And all of this translates to increased suffering for the people and businesses affected. Ultimately, the ability of the community to recover is diminished, and the opportunities that exist to prevent future similar disasters are sacrificed. To more effectively address vulnerability, rebuilding must be performed in a manner that considers the disaster's unique impacts as well as any information about new hazards that were uncovered by the occurrence of the disaster. But performing up to this expectation requires planners to perform significant and time-consuming research in a manner that is cooperative, collaborative, and as inclusive as possible. And time is not on the side of the planning team once the disaster has occurred. In the absence of an in-place plan or strategy, decisions may be made with little or no planning or analysis, thereby ensuring that opportunities for long-term community resilience are lost.

Communities that conduct pre-disaster recovery planning create a number of direct and indirect benefits, which together make post-disaster recovery planning and operations more efficient and effective. Just as with other types of emergency management planning, communities find they better understand their hazard profile, their capacity to respond, and their risk and vulnerability simply as a byproduct of the planning exercise itself. And in that discovery process, communities become better able to limit their underlying risks and vulnerabilities, whether through regular development activities (including new development, redevelopment, and changes in land-use and other planning instruments), hazard mitigation, or through increased preparedness. In this manner, the benefits of pre-disaster recovery planning help to illustrate the interconnectedness of the four major emergency management functions (preparedness, mitigation, response, and recovery).

[Smith and Sandler \(2012\)](#) describe such benefits in their *State Disaster Recovery Planning Guide* as follows:

One of the best reasons to develop a pre-disaster recovery plan is to avert or minimize the likelihood of a disaster occurring in the first place. This can be achieved by comprehensively incorporating hazard mitigation measures into disaster recovery procedures. The failure to link hazard mitigation and disaster recovery has resulted in repeated disasters over time even in those locations where large sums of federal, state, private sector, and individual resources were expended

to repair communities following previous events.

At the most basic level, pre-disaster recovery planning sets an all-encompassing recovery target that recovery planners in the chaos of a post-disaster scenario can focus on as they assess what is needed and plot a path forwards. It is impossible to know for certain how the disaster will manifest in terms of its location, its severity, and the precise nature of impacts to humans, society, the economy, property, and the environment. Pre-disaster recovery plans deal with this uncertainty by maintaining a hypothetical stance which utilizes broad, sweeping goals and ideals rather than specific actions and procedures. When actual recovery planning is required in the post-disaster environment, most of the required decisions will occur in split-second timeframes or rapid succession, and as such the time for analysis will almost always be insufficient.

By outlining overarching goals and objectives, a pre-disaster recovery plan helps to provide direction for such decisions. This is important when one considers that recovery decisions made without guiding goals and objectives will be limited in their potential to address all-hazards risk or be out of line with the community's development trajectory. For instance, recovery goals might include *reducing vulnerability to electrical transmission wires* or *revising building codes to address new seismicity estimates* ([IRP, 2011](#)).

A planning team need not have actual damage assessment data to understand the value of such goals—yet in the aftermath of a disaster such goals may not be readily apparent in light of the pressures to move ahead with reconstruction. Through the pre-disaster recovery planning process, communities will identify their recovery goals and objectives. Again, these are guided not by the damages of a particular disaster, but rather by the community's longer-term development goals, or more importantly, by the community's vision for itself.

At the most basic level, a community may wish to increase its resilience to all major hazards, whether those which precipitated a particular disaster or simply those for which a specific vulnerability has been noted. If the community has conducted hazard mitigation planning, then much of the legwork will have been laid through these efforts. By considering the outcome of the mitigation process in the context of a post-disaster lens, the decision-making calculus that drove prioritization will likely change. For instance, perhaps a community noted in the community hazard mitigation plan that a flood buyout program would effectively minimize flood risk in the community by eliminating homes from the 100-year floodplain. However, the community did not have the funding to support such an endeavor, and chose to prioritize other options such as the installation of flood gauges and community education about floodplain and wetlands management activities.

Pre-disaster recovery goals and objectives are not much different than post-disaster goals and objectives—the difference is in the opportunities that exist to understand exactly what each goal means and what drives it. And unlike the mitigation goal just discussed, there are many other goals that may have more

to do with development than they do with recovery. But given the parallel nature of recovery and development, communities facing recovery are often just as inclined to pursue them given the ‘window of opportunity’ that disasters often present. For instance, a community may recognize in non-disaster times that their land-use practices are not optimal. Perhaps the community developed slowly over time, and the original planning goals related to land use did not anticipate the community in its present state. It can be difficult, if not impossible, to make sweeping changes to land use patterns outside of disaster situations, especially if there are businesses or individuals who stand to lose because of the changes. However, recognizing that the disaster may change the factors that drive opposition, pre-disaster recovery plans can help to characterize a preferable land use scheme.

Pre-disaster recovery planning also enables the planning team to consider any special statutory requirements that may need to be in place in order to manage the recovery needs likely to present. Communities often find that they do not have the legal authority to do what they feel is necessary given that the existing ordinances do not provide enough clarification on the issue or perhaps simply fail to permit the action. Through the planning process, the planning team is able to consider each intended action or strategy in light of existing ordinances and determine whether the current legal framework is sufficient or perhaps even an obstacle. One way of working around such problems is the passage of emergency ordinances that grant special powers in the event of a disaster. But the community may wish to pass a new ordinance altogether, and this typically cannot occur in the time-constrained post-disaster period.

For instance, the State of Florida passed legislation in the mid-1990s that required all coastal communities and municipalities to conduct “post-disaster redevelopment planning.” While this mandate was repealed about 15 years later, a section on pre-disaster recovery planning called “Post-Disaster Redevelopment Plan” has become an official component of local comprehensive development plans and as such many communities address the pre-disaster planning need nonetheless. These redevelopment plans are meant to “identify policies, operational strategies, and roles and responsibilities for implementation that will guide decisions that affect long-term recovery and redevelopment of the community after a disaster.” They are meant to help impacted communities to “[seize] opportunities for hazard mitigation and community improvement consistent with the goals of the local comprehensive plan and with full participation of the citizens.” ([Florida Department of Community Affairs, 2010](#)).

Another example comes from the City of Oakland, California Long-Term Disaster Recovery Plan, which was created as an example of a pre-disaster recovery plan for use a model for local governments in the area. The plan discusses the importance of having purchasing and contracting provisions in place prior to the onset of a disaster. The language of this section reads as follows:

Ensure that the purchasing and contract portion of the Municipal Code remains

flexible following a disaster. These types of provisions are a simple way to allow the city manager to quickly address urgent issues through access to funds. This provision is not a “blank check,” but a way to launch recovery processes quickly. As is typical with most cities, the city manager will still be required to justify the purchases to city council at a later date. Considering the high cost of recovery, it is recommended that the City continue to specify “no dollar limit” to allow for maximum flexibility in making emergency purchases.

City of Oakland (2009).

Communities should consider the full range of benefits they stand to enjoy by conducting recovery planning activities in advance of any imminent or actual disaster, not just these general ones. How such benefits take form is unique for each entity, given that what makes the particular community's recovery efforts efficient or effective differs greatly from other communities, and even between two incidents that occur at different times within the same community. It should be reaffirmed that pre-disaster recovery planning provides the benefit of knowledge and information, gained through research, collaboration, communication, and other acts and processes required to put together pre-disaster strategies and frameworks.

Communities performing disaster recovery planning are allowing themselves to dedicate the time necessary to ensure that technical studies are comprehensive and accurate, and consider each of the possible outcomes associated with the recommendations that emerge. For instance, consider how a community that takes the time to consider debris disposal sites, which is one of the most important and likewise common foci of pre-disaster recovery planning, benefits by addressing this problem prior to the onset of actual disaster conditions. Participants should recognize why communities need to consider their overall strategy for prioritizing the removal and disposal of debris, which when left on site tends to stall recovery progress. The complex process includes careful study of the anticipated debris generated, as well as the location within the community where it is likely to collect.

Communication strategies and messages also need to be developed such that procedures and protocols (such as where on one's property to place debris for collection) need to be established and tested. Processes for differentiating debris by type and associated hazard (such as contamination, for instance) need to be developed and those tasked with activities that require such processes need to be trained. And finally, processes for paying for debris collection, transport, and disposal need to be sorted out prior to the disaster.

Most communities do not have a massive surplus of public lands where debris may be disposed of. Some communities may be able to simply work with existing landfill services to address the surges associated with major disasters. However, to do this the community must understand what their disposal requirements are. In many cases, it becomes apparent through study that additional land must be identified to address a debris surge, especially when it is organic material such as trees or when it includes hazardous materials. In

each case where suitable land within the community must be identified, each must be assessed in terms of several important factors including the physical area available, the soil type, topography, and hydrology, among other factors. For each site, the associated environmental implications must be studied as well. Planners need to gauge whether or not individuals or groups in the community, especially those who live very close to these sites, would be opposed to their designation as a debris disposal facility. If processing is required at the facility, as occurs when debris recycling is to be exercised or when debris is likely to include objects containing hazardous materials (such as with refrigeration units, computer monitors, and automobiles, among many others), then special equipment and procedures may need to be procured.

Other issues that typically require a significant amount of study, and which therefore benefit greatly from the conduct of pre-disaster recovery planning, include:

- Disaster housing site selections
- The location of the community recovery center (or multiple locations if more than one is determined to be necessary)
- Infrastructure modernization decisions
- Changes in land-use designations
- Site selections for temporary business activities
- The degree to which local contracting resources will be utilized
- The identify of contractors located outside the community, including states far from the affected area, that could be called upon to assist in infrastructure and housing repair and reconstruction
- Coordination mechanisms, including leadership, membership, and information sharing, for example
- Volunteer and donations management systems and structures

Critical Thinking

Why is the recovery period often called a “risk-reduction window of opportunity?” What kinds of risk-reduction measures are easier to perform during recovery than at other times, and why are they easier?

Conclusion

As this chapter demonstrates, the federal government plays a significant role in initiating and funding the disaster recovery process. But for recovery to be effective, the planning and decision making must be done at the local level. With a disaster comes disruption and tragedy, but in the aftermath comes opportunity. Changes to FEMA's Stafford Act now require communities and states to have mitigation plans approved before the disaster. These plans, developed in the calm before an event happens, can become the blueprint for facilitating recovery and making communities less vulnerable in the post-disaster environment. Perhaps someday the same will be true for pre-disaster recovery planning given the important role this process plays in increasing the likelihood of efficient and effective recovery. Integration of recovery planning into the regular planning process will furthermore allow for the political process to work, inclusive of citizen participation, and will help planners to garner support for the kinds of changes that make communities safer and more secure even in the absence of a realized disaster. Hurricane Sandy was the first major disaster in which the NDRF was deployed and used extensively to support the recovery process. As with any new process, things did not go as smoothly as was hoped in the beginning. Coordination between the Recovery Support Functions did not work as well as planned, or hoped; aspects of the NDRF structure proved awkward to implement; and there was a general lack of understanding of how the federal agencies would work together. But the process has evolved in the intervening years and the kinks are steadily being ironed out. The language of the NDRF provides valuable guidance for communities, especially its calls for a greater focus on pre-disaster recovery planning. But most significantly, this document provides for all communities the principles by which pre- and post-disaster recovery planning and operations should be conducted.

Important Terms

Disaster Recovery Center
Federal Disaster Recovery Coordinator
Federal Coordinating Officer (FCO)
Joint Field Office (JFO)
National Disaster Recovery Framework (NDRF)
National Processing Service Center (NPSC)
Recovery
State Coordinating Officer
Zoning

Self-Check Questions

1. Who plays the largest role in providing the technical and financial support for recovery?
2. What is a Disaster Recovery Center?
3. Which office is the central coordination point among federal, state, local, and tribal agencies and voluntary organizations for delivering recovery assistance programs?
4. What is the purpose of the National Processing Service Centers in Texas, Virginia, and Maryland?
5. What are the four types of assistance provided by the Disaster Housing Program?
6. What is covered under the Individual and Households Program?
7. What is the minimum federal share for FEMA Public Assistance Grants?
8. What is Pre-Disaster Recovery Planning, and why is it so important?
9. What is the National Disaster Recovery Framework?
10. What changes have been made since Hurricane Sandy for entities to be eligible for Public Assistance grant funding?
11. What is the difference between emergency work and public work?
12. What federal agencies besides FEMA provide recovery assistance, and what kind of assistance does each provide?
13. What is a VOAD, and what does it do?
14. Name some examples of policy areas and tools that should be considered by decision makers as they develop their recovery plan. Explain why each should be considered.

Out-of-Class Exercises

1. Visit the NVOAD website, and find out what organizations are members of your state VOAD (www.novoad.org/network).
2. Contact your state office of emergency management, and ask them if your state has any active recovery operations related to presidentially declared disasters. Find out how much money was granted toward the state, where it went, and what kinds of recovery and mitigation measures it covered.

International Disaster Management

Abstracts

This chapter describes the international disaster concept and introduces the conglomeration of participants in the international disaster management domain (which includes governmental agencies, international organizations, nongovernmental organizations (NGOs), and financial institutions) that prepare for, respond to, and bring about recovery from them. The mission and goals of each of these entities and groups are described (although their performance is not detailed).

Keywords

Complex humanitarian emergency; coordinating organization; developing nation; donor agency; international financial institution; international organization; nongovernmental organization; private voluntary organization and sovereignty

WHAT YOU WILL LEARN

- How developing nations are affected by disasters
- Why and how national, international, and nongovernmental organizations assist countries that are affected by major disasters
- Important issues that influence how international disasters are managed
- Disaster risk management role of the United Nations system
- The nongovernmental response to international disasters
- Assistance provided by the US government to other nations affected by disasters
- Involvement of the international financial institutions, including the World Bank and the International Monetary Fund, in the funding of disaster response, relief, and reconstruction

Introduction

Citizens of all nations are exposed to risk associated with the many natural, technological, and intentional hazards described throughout this book, and all nations fall victim to major emergencies and disasters. Throughout history, civilizations have adapted to their surroundings in the hopes of increasing the likelihood of survival. As societies became more organized, complex systems of response to these hazards were developed on local, national, and regional levels. Response capacity of individual nations can be linked to several factors, including the propensity for disaster, local and regional economic resources, government structure, the availability of technological, academic, and human resources, and social and political risk attitudes. And while one might expect that progress towards meeting global development goals would point to fewer and less damaging disasters in light of these capacity drivers, it is the opposite that is actually occurring. Significant changes in hazard profiles due to climate change and human settlement patterns are leading to an increase in the types of capacity-exceeding events that overwhelm nations and thus require the assistance of the international community of response and recovery stakeholders. Furthermore, there appears to be an increase in the number of disasters that affect multiple countries at once, disrupting even regional response frameworks and stressing the limits of the collective global disaster management capacity.

International disaster management is an area of disaster management that is quickly expanding, and for which the concepts and terminology are often very different from what is encountered at the national level in the United States (and in any sovereign nation for that matter). This chapter describes the international disaster management concept and introduces the conglomeration of participants in the international disaster management domain (which includes governmental agencies, international organizations, nongovernmental organizations (NGOs), and financial institutions) that mitigate, prepare for, respond to, and facilitate recovery from them. The mission and goals of each of these entities and groups are described (although their performance is not detailed).

Disasters in Developing Nations

No nation is immune to the occurrence or impact of disasters, though rates of exposure and the distribution of impacts are by no means uniform. Rich and poor nations are both affected, but it is generally the developing nations that suffer the greatest impact of nature's fury on account of the physical, social, economic, and environmental vulnerability that typify them. In fact, 90% of disaster-related injuries and deaths associated with capacity-exceeding events occur in nations with per capita income levels below \$760 per year ([IPCC, 2012](#)). And it is these same poor nations that are most often subject to the internal civil conflict that leads to complex humanitarian emergencies (CHEs)—arguably the greatest disaster management challenge from both planning and operational standpoints.

Although international development agencies accept disaster preparedness and mitigation activities as being integral to the achievement of sustainable development ([Aitsi-Selmi and Murray, 2015](#)), it comes as no surprise that countries ranking lower on development indices have placed similarly low budgetary priority on disaster management issues. These nations' resources tend to be more acutely focused on social interests such as education and infrastructure, or on military demands, rather than reducing short- or long-term hazard risk. Because disasters are chance events, and thus not guaranteed to occur, disaster management programs in poor countries tend to be viewed as superfluous. Many assume their military is well-enough equipped to handle whatever immediate logistical needs that might arise, and expect that the mass care relief and long-term reconstruction needs will be planned for and solved if and when a disaster happens. Even in countries with moderate levels of development, delegation of disaster management responsibilities to the military is common despite the fact that these agencies are rarely trained to carry out the necessary response tasks. Poverty and uncontrolled urbanization further compound the problem, and often force large populations to concentrate in perilous, high-risk urban areas that contain little or no defense against disasters.

International Disasters Defined

In Chapter 2, Natural and Technological Hazards and Risk Assessment, the term *disaster* was defined as an adverse event that overwhelms an individual's, an agency's/organization's, or a jurisdiction's capacity to respond. Disasters are declared at the level below which capacity has been overwhelmed, which in the United States might be a local government, a state government, or the Federal government (e.g., a state governor that declares a state-level disaster but does not request a subsequent declaration from the US President is indicating that state resources are sufficient to meet the needs of the impacted community or communities.) With each successive declaration, the scope and size of the disaster grows. When the response capacity of the entire nation's emergency management structure is exceeded, that event becomes known as an *international disaster*, and involvement of the international community of responders is required.

The threshold beyond which a disaster becomes international in size and scope is unique to each country and driven by a number of measures including the severity of hazard consequences, the availability of economic resources, the comprehensiveness and appropriateness of responder training, the built-in resilience of infrastructure, the actual ability and the public impression of the government's ability to manage the situation (which may be influenced by how much the government itself has suffered as a result of the event), and the availability of specialized assets, among many others. Capacity thresholds are crossed much earlier in poorer countries where deficiencies are pervasive, but even the wealthiest nations find themselves in need of international assistance from time to time. Wealthy country response and recovery requirements may include specialized or widely-needed equipment and supplies, specialized manpower (skills or knowledge), philanthropic assistance to meet the needs of individuals and households, immediate access to cash or credit, and other event-specific needs.

Due to the large and growing number of events that have escalated to this level, a variety of bilateral and multilateral legal arrangements, systems, and procedures have emerged by which appeals for assistance are made and offers of support (both unsolicited and solicited) are communicated and enacted. In today's globally-interconnected world, driven by round-the-clock television coverage, Internet, new media, and social media, a disaster typically receives global recognition within a matter of minutes. And when that happens, the formal and informal international response mechanisms leap into action.

Disasters that are the result of natural or technological disasters (or a combination of the two, as occurred in Japan following the Great East Japan Earthquake (2011)) incite immediate concern and result in a succession of bilateral assistance offers. These events, the required response and recovery needs, and the conditions into which assistance is provided, are generally well-defined and adequately understood. On the other hand, complex humanitarian emergencies (CHeEs) remain subject to diverse interpretation and ever-changing

standards. Thus, for the purposes of this book, a CHE is characterized according to the definition established by the United Nations (UN) which classifies it to be a “humanitarian crisis in a country or region where there is total or considerable breakdown of authority resulting from the internal and/or external conflict and which requires an international response that goes beyond the mandate or capacity of any single [UN] agency” ([UNHCR, 2001](#)). Andrew Natsios ([1997](#)), a former director of the US Agency for International Development (USAID), identified five characteristics most commonly seen in CHEs in varying degrees of intensity:

- Civil conflict, rooted in traditional ethnic, tribal, and religious animosities (usually accompanied by widespread atrocities)
- Deteriorated authority of the national government such that public services disappear and political control dissolves
- Mass movements of population to escape conflict or search for food, resulting in refugees and internally displaced people (IDPs)
- Massive dislocation of the economic system, resulting in hyperinflation and the devaluation of the currency, major declines in gross national product, skyrocketing unemployment, and market collapse
- A general decline in food security, often leading to severe malnutrition and occasional widespread starvation

CHEs are most commonly the direct result of internal or external conflict, but there are two other situations where they are encountered. First, when a major disaster (natural or technological) strikes in a country marked by ongoing conflict. And second, when security and stability deteriorate following a disaster due to a breakdown in rule of law, a loss of services, or other factors tied to unmet needs. Regardless of the reason the CHE occurs, there are numerous considerations that must be addressed despite the fact that CHEs otherwise share many characteristics with non-CHE response and recovery operations. These factors often include provisions to ensure that responder safety and security is maximized, that combatants view responders as impartial to the conflict, that response operations do not exacerbate the conflict further by favoring one group over others, or that the distribution of relief provisions is not used by a warring faction to influence the course of conflict, among others.

Many of the organizations and entities described in this chapter respond to all three types of disasters, accepting the added risk that comes with complex emergencies. (*Related videos*: OCHA Director Stephen O’Brien, “No higher purpose than meeting humanitarian needs.” <http://bit.ly/20EtyR3>; Commissioner Georgieva Visiting NRC in Zaatri Refugee Camp. <http://bit.ly/1U8ZYhM>; What is UNHCR? <http://bit.ly/1OYQl9q>; Training for an emergency—Humanitarian Aid Workers in Crisis Regions. <http://bit.ly/1UeLGzg>.)

Important Issues Influencing the Response Process

There are five key issues that must be addressed when responding to international disasters. These include:

- Coordination
- Sovereignty of the state
- Equality in relief distribution
- Linking relief and development
- Political implications

Coordination is a vital and immediate need on account of the sheer number of agencies that typically respond. It is not uncommon for several hundred local and international NGOs to respond when larger disasters strike, each agency offering a particular set of skills, service, or resources. With successful coordination and cooperation systems in place, the influx of these agencies can represent an important source of life-saving assistance—but infighting, turf battles, and nonparticipation in coordination mechanisms can lead to confusion and even exacerbation of disaster conditions (sometimes called the “second disaster” (Barrantes et al., 2009)).

The UN has become widely recognized as the central coordinating body in disasters requiring international assistance, and specialized UN agencies handling the more specific needs associated with particular disaster consequences. The UN is able to capitalize on long-standing relationships shared with the host country government to form partnerships on which joint control is established. However, UN coordination must be requested by the affected government and even then, the organization must work within the constraints of limited statutory authority. Many of the nongovernmental, private sector, and faith-based organizations that respond to international disasters can and do freely operate outside of any such coordination structure established by the UN or any other organization. Several of the larger nongovernmental organizations and associations have even established their own standards on coordination and conduct, including the Red Cross Code of Conduct (<http://bit.ly/248M8BC>), the Sphere Project Humanitarian Charter and Minimum Standards in Disaster Response (<http://bit.ly/1XUQIE6>), the Oxfam Code of Conduct for NGOs (<http://bit.ly/22pVpWW>), and the INGO Accountability Charter (<http://bit.ly/1UeWA7X>).

The second issue is that of *sovereignty of the state*. State sovereignty is based on the recognition of political authority characterized by territory and autonomy. Accordingly, a foreign nation or organization cannot intercede in domestic matters without the prior consent of the ruling government. This can be a major hurdle in response to CHeS that have resulted from civil war, as plagued efforts in Somalia until recently due to the fact that there was no single recognized or stable government with which stakeholders could work. Although less commonly seen, sovereignty has also been an issue in matters of natural and

technological disasters, particularly when a nation does not want to be viewed as weak or unable to take care of its people. Examples of such behavior include the Government of Japan's initial hesitation to request the assistance of international response agencies in the first days following the 1995 Kobe Earthquake, the actions of the former Soviet Union following the nuclear power plant accident in Chernobyl, and the protracted refusal by the Government of Myanmar to allow entry of humanitarian aid workers in the aftermath of Cyclone Nargis in 2008 (note that the Governments of Japan and Myanmar both took very different, open approaches to humanitarian assistance after the 2011 Great East Japan Earthquake and the 2015 Myanmar Flood).

The third issue is *equality in relief distribution*, and this factor also applies to all disaster types. Situations often arise where certain groups in need of aid are favored over others. There are two primary causes of such inequality. The first is discrimination that results from gender bias. While this is most commonly encountered in societies where gender roles are strictly defined and women are traditionally tasked with duties related to the home and children (which tend to be increased in times of crisis), it can happen anywhere. It was announced at a 2016 conference on gender that women and children were fourteen times more likely to die in disasters than men ([Asia News Network, 2016](#)). Males may be more likely to have opportunities to wait in relief lines for supplies, and the women (as well as children and the elderly) become even more dependent on them for survival. This situation is exacerbated if a woman is a widow or single parent and has no ability to compete for distributed aid.

Additional Research

Considerable effort has been expended in assessing the effect of gender on disaster vulnerability and the recovery abilities of individuals living in societies where gender bias is prevalent. The following reports shed considerable light on the plight of women affected by disasters throughout the world:

- The Pan American Health Organization fact sheet "Gender and Natural Disasters." <http://bit.ly/1OOSKyb>
- The World Health Organization paper "Gender and Health in Disasters." <http://bit.ly/25jmP2o>
- IFRC guide "Gender Sensitive Approaches for Disaster Management" <http://bit.ly/1WlxEPG>.

The second form of inequality in relief is that of class bias. Although most obvious in social systems explicitly based on caste identity, underlying ethnic and racial divides often present similar problems. Avoiding these forms of bias is difficult for humanitarian agencies because workers must be acutely aware of the existence and nature of discrimination in order to counteract its influence. Host-country nationals are often "hired" by humanitarian agencies to assist in relief distribution, and by inadvertently hiring a disproportionate number of people from a specific ethnic or social group can lead to unfair distribution of relief along those same ethnic/social lines. At the same time, humanitarian

agencies are quick to focus on those groups most visibly affected by a CHE, such as IDP populations, causing an inordinate percentage of aid to be directed to them while other needy groups go unnoticed.

Many of the international response agencies are continuously developing systems of relief and distribution that work to counteract the complex problems associated with these biases; however, the difficult nature of this issue is highlighted in the fact that specifically targeting groups, such as women or children, can lead to reverse discrimination. Any of these biases can lead to a decline in perceived legitimacy or impartiality of the assisting agency and/or result in exacerbation of the needs being addressed (Maynard, n.d.).

A fourth issue is the importance of *capacity building* and *linking relief with development*. Responding agencies have an obligation to avoid using a bandage approach when assisting an affected country. Disasters almost always present a window of opportunity to rebuild old, ineffective structures and develop policy and practice in a way that leaves behind a more empowered, resilient community. Because these goals mirror those of most traditional development agencies, linking relief and development should not be a major deviation from either type of agency's missions. These opportunities are greatest in situations that require the complete restoration of infrastructure and basic social services, and are found equally in disaster and CHE scenarios. In the reconstruction phase, it is vital that training and information exchanges occur and that local risk is fully incorporated to mitigate for repeat disasters. These repeat disasters often contribute greatly to a nation's lag in development, and therefore fully addressing them is vital to increasing the nation's likelihood of being developed sustainably. The United Nations and the International Recovery Platform each stress the importance of "Build Back Better" following disasters, and the assistance provided by external stakeholders is a primary driver of this approach.

Additional Research

The United Nations Office for Disaster Risk Reduction (UNISDR) guide *Building Back Better for Next Time* (2010) (<http://bit.ly/1Z4sHZJ>) provides examples of ways that countries and communities applied development principles in utilizing international disaster assistance.

A final consideration in the provision of humanitarian assistance in international disasters is that of the political considerations tied to such aid. This is primarily a concern of governments, specifically in reference to bilateral (country to country) assistance. Concerns may relate to either the donor or the recipient government, or to both, and include:

- Maintaining effective command and control of disaster operations
- Avoiding the impression of 'weakness' by the public and by the international community
- Managing ideological differences between the donor and recipient nations' governments
- Addressing liability and the risk of accident-related implications

- Minimizing the influence of corruption
 - Identifying and mitigating the collateral impacts of humanitarian aid
- These issues and others are described in detail in the FEMA publication *Investigation of the Political Implications of Disasters Requiring International Assistance* (<http://1.usa.gov/1Rv9OZK>).

Critical Thinking

- Do problems associated with equality in distribution of relief occur only in developing countries, or can they occur in any country? Can you find any examples of times when there has been inequality in relief distribution in the United States?
- Why is it imperative that relief is linked with development? Do you think that disaster relief makes recipient nations more dependent or more independent? Explain your answer.

United Nations Disaster Management Efforts

The United Nations (UN) was established in 1945, when representatives from 51 countries met in San Francisco to create the United Nations Charter as a commitment to preserve peace in the aftermath of World War II. Later that year, the Charter was ratified by the five permanent members: China, France, the Soviet Union, the United Kingdom, and the United States, as well as several other countries. Today, 193 countries are members of the UN, and the Charter (which is similar to a sovereign state's constitution and establishes the rights and responsibilities of member states) is amended as is necessary to reflect the changing needs of current world politics.

The UN itself is not a government body, nor does it write laws; however, the autonomous member states do have the ability through the UN to resolve conflict and create international policy. No decision or action can be forced on a sovereign state, but as global ideals are naturally reflected through these collaborative policies, they usually are given due consideration.

Through the major UN bodies and their associated programs, the UN has established a presence in most countries throughout the world and fostered partnerships with Member State governments. Although more than 70% of UN work is devoted to development activities, several other issues are central in their mission, including disaster mitigation, preparedness, response, and recovery. In the event of a disaster, the UN is quite possibly the best positioned to coordinate disaster relief and to work with the donor and recipient governments involved in rehabilitation and reconstruction. This is especially true for disasters in developing countries, where development projects funded by the UN or other development agencies may be ongoing and require adjustment to accommodate for damages to infrastructure and the economy.

Upon onset of a disaster, the UN responds immediately with aid in the form of food, shelter, medical assistance, and logistical support. The UN Emergency Relief Coordinator heads the international UN response to crises through a committee of several humanitarian bodies, including the UN Children's Fund (UNICEF), the UN Development Programme (UNDP), the World Food Programme (WFP), the UN High Commissioner for Refugees (UNHCR), and other associated agencies as deemed necessary in accordance with the problems specific to the event. Each of these agencies, as described in this chapter, fulfills a specific humanitarian need that presents in both natural and man-made emergencies and disasters.

The UN also promotes hazard prevention and mitigation activities through guidance and its regular development projects. By encouraging the building of early warning systems and the conduct of monitoring and forecasting, efforts work to increase local capacity in order to adequately boost local and regional preparedness. In conclusion of the International Decade for Natural Disaster Reduction of the 1990s (which strove to focus on a shift from disaster response-oriented projects to disaster mitigation), the UN adopted the International Strategy for Disaster Reduction (ISDR) to promote the necessity of disaster risk

reduction and risk mitigation as part of its central mission. This initiative sought to enable global resilience to the effects of natural hazards in order to reduce human, economic, and social losses through the following mechanisms:

- Increasing public awareness
- Obtaining commitment from public authorities
- Stimulating interdisciplinary and intersectoral partnership and expanding risk-reduction networking at all levels
- Enhancing scientific research of the causes of natural disasters and the effects of natural hazards and related technological and environmental disasters on societies

These strategies continue to be pursued by each of the UN country offices, which urge member countries to take necessary action in the most vulnerable communities. Mitigation and preparedness strategies are implemented at all levels of society via public awareness campaigns, secured commitment from public authorities, intersectoral cooperation and communication, and technical knowledge transfer. (Related video: Margareta Wahlstrom on Disaster Risk Reduction. <http://bit.ly/27ZZPrm.>)

The Hyogo Framework for Action (HFA)

In 2005, at the second decennial World Conference on Disaster Risk Reduction (WCDRR) in Kobe, Japan, 168 countries adopted *The Hyogo Framework for Action (HFA) 2005–2015: Building the Resilience of Nations and Communities to Disasters*. This action was endorsed by the General Assembly in UN Resolution 60/195.

The HFA outlined a 10-year plan that reflected the intention of the global community to take a more comprehensive, holistic approach to disaster risk reduction. The HFA called for nations to pursue three strategic goals during the decade of action in order to bring about a substantial and measurable reduction of disaster losses (fatalities and social, economic and environmental losses), which included:

1. The integration of disaster risk reduction into sustainable development policies and planning
2. Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards
3. The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programs

The Hyogo Framework also defined five priorities for action and identified the collective and individual roles and responsibilities of key stakeholders in its implementation and follow-up. These priorities include:

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation
2. Identify, assess, and monitor disaster risks—and enhance early warning
3. Use knowledge, innovation, and education to build a culture of safety and resilience at all levels
4. Reduce the underlying risk factors
5. Strengthen disaster preparedness for effective response at all levels

Following the WCDRR, the United Nations Under-Secretary-General for Humanitarian Affairs (USG) launched a consultative process to consider practical ways of strengthening the ISDR System, building on existing mandates, institutions, partnerships and mechanisms and with the key purpose of implementing the Hyogo Framework for Action. The rationale for strengthening the ISDR and describing it as a system of partnerships was based on the need for making substantial progress in implementing a worldwide disaster risk reduction agenda, which calls for concerted efforts by all stakeholders. The UN Office for Disaster Risk Reduction (UNISDR) developed a standard set of comprehensive indicators against which regions, nations, and local governments could plan for and measure their actions. In 2-year increments, nations self-assessed their progress against the defined measures of success, and reported this progress to the world community. The tool was called the HFA Monitor, and the reports that were submitted were (and remain) available on the UNISDR PreventionWeb website (<http://bit.ly/1mK0Rwe>).

Related video: The Hyogo Framework for Action: <http://bit.ly/25w1wKU>

The Sendai Framework for Disaster Risk Reduction

In March of 2015 the WCDRR was held for a third time, this time in Japan's tsunami-impacted city Sendai. The purpose of the meeting was to identify a more operational mechanism (than the HFA) for managing global disaster risk. This conference represented the culmination of 10 years of working to pursue the HFA goals, and the purpose was to create a new global framework. The Sendai Framework, which was the result of this conference, had been called upon by through UN General Assembly Resolution 66/199. Hundreds of meetings held in all regions of the world in the years prior, and scores of reports that were drafted defined the outstanding needs and informed the process.

The Sendai Framework was designed to address 15 years of action, which is 5 years longer than each of the previous two-decade based efforts. It is a non-binding agreement that recognizes national governments as having the primary role for disaster risk reduction, but acknowledges that there is a much wider stakeholder community (including local government, the private sector, NGOs, and others) that shares the burden. There are seven "Global Targets" that are listed in the framework, including:

- Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rate in the decade 2020–30 compared to the period 2005–15
- Substantially reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 in the decade 2020–30 compared to the period 2005–15.
- Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030
- Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including

through developing their resilience by 2030

- Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020
- Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030
- Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030

There are four priorities for action, which include:

Priority 1. Understanding disaster risk

Disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics, and the environment. Such knowledge can be used for risk assessment, prevention, mitigation, preparedness, and response.

Priority 2. Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the regional, national, and global levels is very important for prevention, mitigation, preparedness, response, recovery, and rehabilitation. It fosters collaboration and partnership.

Priority 3. Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health, and cultural resilience of persons, communities, countries and their assets, as well as the environment.

Priority 4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation, and reconstruction

The growth of disaster risk means there is a need to strengthen disaster preparedness for response, take action in anticipation of events, and ensure capacities are in place for effective response and recovery at all levels. The recovery, rehabilitation, and reconstruction phase is a critical opportunity to build back better, including through integrating disaster risk reduction into development measures.

The United Nations hopes to increase implementation above what was achieved during the HFA by providing governments with implementation guides. These guides are being drafted to increase engagement of the different DRR stakeholders, to increase a sense of ownership in risk reduction, and most importantly, to strengthen the accountability for risk.

(Related video: The Sendai Framework for Disaster Risk Reduction:
<http://bit.ly/1UqHw7x>).

The UN Office for Disaster Risk Reduction (UNISDR)

The United Nations Office for Disaster Risk Reduction (UNISDR) is the secretariat of the International Strategy for Disaster Reduction, and the global hub of the disaster risk reduction community (which includes national governments, NGOs, intergovernmental organizations, financial institutions,

technical bodies, and others.) UNISDR served as the focal point for implementation of the Hyogo Framework for Action (HFA), and is now performing the same function for the Sendai Framework for Disaster Risk Reduction during the 2015–30 period.

UNISDR was created in 1999 at the end of the International Decade for Natural Disaster Reduction. The organization functions as a clearinghouse for disaster reduction information, campaigns to raise hazard awareness, and produces articles, journals, and other publications and promotional materials related to disaster reduction. UNISDR performs four distinct functions, which include and are described as follows:

1. Coordination of international efforts in disaster risk reduction, and guidance, monitoring, and reporting on progress towards implementation of the Sendai Framework for Disaster Risk Reduction.
2. Campaigning for the implementation of the Sendai Framework for Disaster Risk Reduction, namely creating global awareness of the benefits of DRR and empowering people and governments to reduce their own hazard vulnerability.
3. Advocating for greater investment in DRR, for more education on DRR, for increased adaptation to climate change, and improved gender equality in disaster-related decision-making processes.
4. Informing and connecting people through the DRR website Prevention Web, publications on good practices, country DRR profiles, and the biennial Global Assessment Report (GAR).

UNISDR is led by the UN Special Representative of the Secretary General for Disaster Risk Reduction. Margareta Wahlstrom currently holds this post. The position was created in 2008 to lead and oversee all DRR activities mandated by the UN General Assembly (GA), the Economic and Social Council (ECOSOC), the Hyogo Framework for Action (HFA), as well as policy directions by the Secretary-General. The newest and perhaps most important function of UNISDR is developing and implementing mechanisms for assessing national government progress towards meeting the goals of the new Sendai Framework for Disaster Risk Reduction. Once established, monitoring procedures will represent an ongoing process. A similar effort was conducted in pursuit of the HFA, which resulted in country- and region-level reports submitted and shared through the online reporting system HFA Monitor. Critics often complained that HFA report submission was by no means complete (several countries either reported sporadically, or not at all), and that it was unreliable given it was based on self-reporting. However, in the absence of any other system that tracks information on an equivalent scale, ISDR monitoring is highly valuable for estimating capacity and enables the production of papers and reports on various thematic issues (such as gender in disaster management, integration of DRR and climate change adaptation, early warning, and others).

The United Nations Development Programme

The UNDP was established in 1965 during the UN Decade of Development to conduct investigations into private investment in developing countries, to

explore the natural resources of those countries, and to train the local population in development activities (such as mining and manufacturing). As the concept and practice of development expanded, the UNDP assumed much greater responsibilities in host countries and in the UN as a whole.

The UNDP was not originally considered an agency on the forefront of international disaster management and humanitarian emergencies because, while it addressed national capacities, it did not focus specifically on the emergency *response* systems (previously considered to be the focal point of disaster management). However, as mitigation and preparedness received their due merit, the UNDP gained increased recognition for its vital risk reduction role. Capacity building has always been central to the UNDP's mission in terms of empowering host countries to be better able to address issues of national importance, eventually without foreign assistance.

International disaster management gained greater attention as more disasters affected larger populations and caused greater financial impacts. Developing nations, where the UNDP worked, faced the greatest inability to prepare and/or respond to these disasters. The UNDP's projects have shifted toward activities that indirectly fulfill mitigation and preparedness roles. For instance, projects seeking to strengthen government institutions also improve those institutions' capacities to respond with appropriate and effective policy, power, and leadership in the wake of a disaster.

Today UNDP recognizes disaster management as integral to its mission in the developing world, as well as to civil conflict and Complex Humanitarian Emergencies (CHE). Excerpts from the UNDP mission acknowledge implicit similarities between UNDP ideals and those of agencies whose goals specifically aim to mitigate and manage humanitarian emergencies. The following excerpts from past UNDP mission statements illustrate these associations:

- [The UNDP] is committed to the principle that development is inseparable from the quest for peace and human security and that the UN must be a strong force for development as well as peace.
- UNDP's mission is to help countries in their efforts to achieve sustainable human development by assisting them to build their capacity to design and carry out development programs in poverty eradication, employment creation and sustainable livelihoods, the empowerment of women, and the protection and regeneration of the environment, giving first priority to poverty eradication.
- UNDP strives to be an effective development partner for the UN relief agencies, working to sustain livelihoods while they seek to sustain lives. It acts to help countries to prepare for, avoid, and manage complex emergencies and disasters.
- UNDP supports [development] cooperation by actively promoting the exchange of experience among developing countries.

The UNDP links disaster vulnerability to a lack of, or weak, infrastructure, poor environmental policy, land misuse, and growing populations in disaster-prone areas. When disasters occur, a country's national development, which the

UNDP serves to promote, can be set back years, if not decades. Even small- to medium-sized disasters in the least developed countries can “have a cumulative impact on already fragile household economies and can be as significant in total losses as the major and internationally recognized disasters” (UNDP, 2001). It is the UNDP’s objective to “achieve a sustainable reduction in disaster risks and the protection of development gains, reduce the loss of life and livelihoods due to disasters, and ensure that disaster recovery serves to consolidate sustainable human development” (United Nations, 2000).

In 1995, as part of the UN’s changing approach to humanitarian relief, the Emergency Response Division (ERD) was created within the UNDP, augmenting the organization’s role in disaster response. Additionally, 5% of the UNDP budgeted resources were allocated for quick response actions in special development situations by ERD teams, thus drastically reducing bureaucratic delays. The ERD was designed to create a collaborative framework among the national government, UN agencies, donors, and NGOs that will immediately respond to disasters, provide communication and travel to disaster management staff, and distribute relief supplies and equipment. It will also deploy to disaster-affected countries for 30 days to create a detailed response plan on which the UNDP response will be based.

In 1997, under the UN Programme for Reform, the mitigation and preparedness responsibilities of the UN Office for the Coordination of Humanitarian Affairs’ (UNOCHA) Emergency Relief Coordinator were formally transferred to the UNDP. In response, the UNDP created the Disaster Reduction and Recovery Programme (DRRP) within the ERD. Soon after, the UNDP again reorganized, creating a Bureau of Crisis Prevention and Recovery (BCPR) with an overarching mission of addressing a range of nonresponse-related issues:

- Disaster Risk Reduction
- Conflict Prevention
- Rule of Law, Justice, and Security
- Projects and Initiatives
- Immediate Crisis Response
- Livelihoods and Economic Recovery
- Crisis Governance

The BCPR helps the UNDP country offices prepare to activate and provide faster and more effective disaster response and recovery. It also works to ensure that the UNDP plays an active role in the transition between relief and development. The UNDP’s disaster management activities focus primarily on the development-related aspects of risk and vulnerability and on capacity-building technical assistance in all four phases of emergency management.

(Related video: Haiti: Disaster to Development. <http://bit.ly/1Uix2nE>.)

In 2016, the UNDP launched a new partnership called the Global Partnership for Preparedness together with the UN office for the Coordination of Humanitarian Affairs (UNOCHA), the Food and Agriculture Organization (FAO), the World Food Programme (WFP), the World Bank Global Facility for Disaster Reduction and Recovery (GFDRR) and ministers from 43 high-risk

developing nations called the V20 (Vulnerable 20). The program seeks to build preparedness capacity in each of the countries affiliated with the program in order to achieve a minimum level of readiness for hazards associated with climate change. The program will support 20 of the most vulnerable countries at first, providing them with:

- Better access to risk analysis and early warning
- More effective response and recovery plans
- Assistance in developing social protection systems and other aspects of response and recovery capacity that help these countries to more effectively manage disasters

The United Nations Office for the Coordination of Humanitarian Affairs

Prior to 1991, the UN Disaster Relief Coordinator managed natural disasters, and special representatives of the UN Secretary General coordinated CHEs. However, UN Resolution 46/182, adopted in Dec. 1991, merged these two roles to create the Emergency Relief Coordinator (ERC). The Department of Humanitarian Affairs was created soon after, with the ERC elevated to the status of Under Secretary General for Humanitarian Affairs. The UN Office for the Coordination of Humanitarian Affairs (UNOCHA) replaced the Department of Humanitarian Affairs under the UN Secretary General's Program for Reform in 1998. UNOCHA was established to accommodate the needs of victims of disasters and emergencies, with its specific role in disaster management the coordination of assistance provided by the UN system (in emergencies that exceed the capacity and mandate of any individual agency). UNOCHA response to disasters can be categorized under three main groupings:

- Coordinating the international humanitarian response
- Providing support and policy development to the humanitarian community
- Advocating for humanitarian issues to ensure that the overall direction of relief reflects the general needs of recovery and peace building

UNOCHA operations are carried out by a staff of approximately 2271 people in New York, Geneva, and in the field. UNOCHA's 2016 budget was \$309 million of which only slightly more than 5% was from the regular UN budget. The remaining 95% is from "extra-budgetary resources," primarily donations from member states and donor organizations.

As head of UNOCHA, the Under Secretary General for Humanitarian Affairs/UN Emergency Relief Coordinator is responsible for the coordination of UN response efforts through the Inter-Agency Standing Committee (IASC). The IASC consists of UN and outside humanitarian organization leaders, and analyzes crisis scenarios to formulate joint responses that maximize effectiveness and minimize overlap. The ERC works to deploy appropriate personnel from throughout the UN to assist UN resident coordinators and lead agencies to increase on-site coordination. In June of 2015, the Secretary General appointed Stephen O'Brien to replace Valerie Amos as Under Secretary General

for Humanitarian Affairs and Emergency Relief Coordinator.

UNOCHA's Disaster Response System monitors the onset of natural and technological disasters. This system includes training assessment teams before disasters strike, as well as conducting post-disaster evaluations. When a disaster is identified, UNOCHA activates a response and generates a situation report to provide the international response community with detailed information (including damage assessment, actions taken, needs assessment, and current assistance provided). If necessary, UNOCHA may then deploy a UN Disaster Assessment and Coordination (UNDAC) team to assist relief activity coordination and assess damages and needs.

If a disaster appears inevitable or is already significant, the ERC in consultation with IASC may designate a humanitarian coordinator (HC), who becomes the most senior UN humanitarian official on the ground for the emergency. The HC is directly accountable to the ERC, thereby increasing the likelihood that the humanitarian assistance provided is quick, effective, and well coordinated. The HC appointment generally signals that the event merits a long-term humanitarian presence. The criteria used by the ERC in deciding whether to appoint an HC are based on recognition of a need for the following:

- Intensive and extensive political management, mediation, and coordination to enable the delivery of humanitarian response, including negotiated access to affected populations
- Massive humanitarian assistance requiring action by a range of participants beyond a single national authority
- A high degree of external political support, often from the UN Security Council

An On-Site Operations Coordination Center (OSOCC) may be set up in the field to assist local first-response teams to coordinate the often overwhelming number of responding agencies. Finally, UNOCHA can set up communications capabilities if they have been damaged or do not exist at an adequate level, as required by the UN responding agencies. UNOCHA generally concludes its responsibilities when the operation moves from response to recovery.

Overall, UNOCHA coordinates humanitarian affairs to maximize response and recovery operations and minimize duplications and inefficiencies through established structures and policies set forth by the IASC (adapted from UNOCHA, 2005):

- Developing common strategies
- Assessing situations and needs
- Convening coordination forums
- Mobilizing resources
- Addressing common problems
- Administering coordination mechanisms and tools

The Field Coordination Support Unit in Geneva manages the human, technical, and logistical resources UNOCHA uses. These resources are primarily provided by the Danish and Norwegian Refugee Councils, the Danish Emergency Management Agency, the Swedish Rescue Services Agency, and the Emergency Logistics Management Team of the United Kingdom Overseas

Development Administration.

The Emergency Relief Coordinator

The Under-Secretary General for Humanitarian Affairs/Emergency Relief Coordinator advises the UN Secretary General on disaster-related issues, chairs the Executive Committee on Humanitarian Affairs (ECHA), and leads the IASC. The coordinator is assisted by a deputy, who holds the position of Deputy Emergency Relief Coordinator (DERC) and is responsible for key coordination, policy, and management issues. (Related video: Human Security: A New Response to Complex Threats. <http://bit.ly/1TQWl6n>. Related video: Restoring Hope After the Floods in Pakistan. <http://bit.ly/1UgG4Sk>)

The Inter-Agency Standing Committee (IASC)

The IASC was established in 1992 under UN Resolution 46/182. It serves as a platform within which the broad range of UN and non-UN humanitarian partners (including UN humanitarian agencies, the International Organization for Migration, three consortia of major international NGOs, and the Red Cross movement) may come together to address the humanitarian needs resulting from a disaster (see Fig. 8.1). The UNOCHA Emergency Relief Coordinator serves as the IASC Chair. The IASC's primary role is to formulate humanitarian policy that ensures a coordinated and effective response to all kinds of disaster and emergency situations. The primary objectives of the IASC are to (UNOCHA, 2005):

- Develop and agree on system-wide humanitarian policies
- Allocate responsibilities among agencies in humanitarian programs
- Develop and agree on a common ethical framework for all humanitarian activities
- Advocate common humanitarian principles to parties outside the IASC
- Identify areas where gaps in mandates or lack of operational capacity exist
- Resolve disputes or disagreement about and between humanitarian agencies on system-wide humanitarian issues

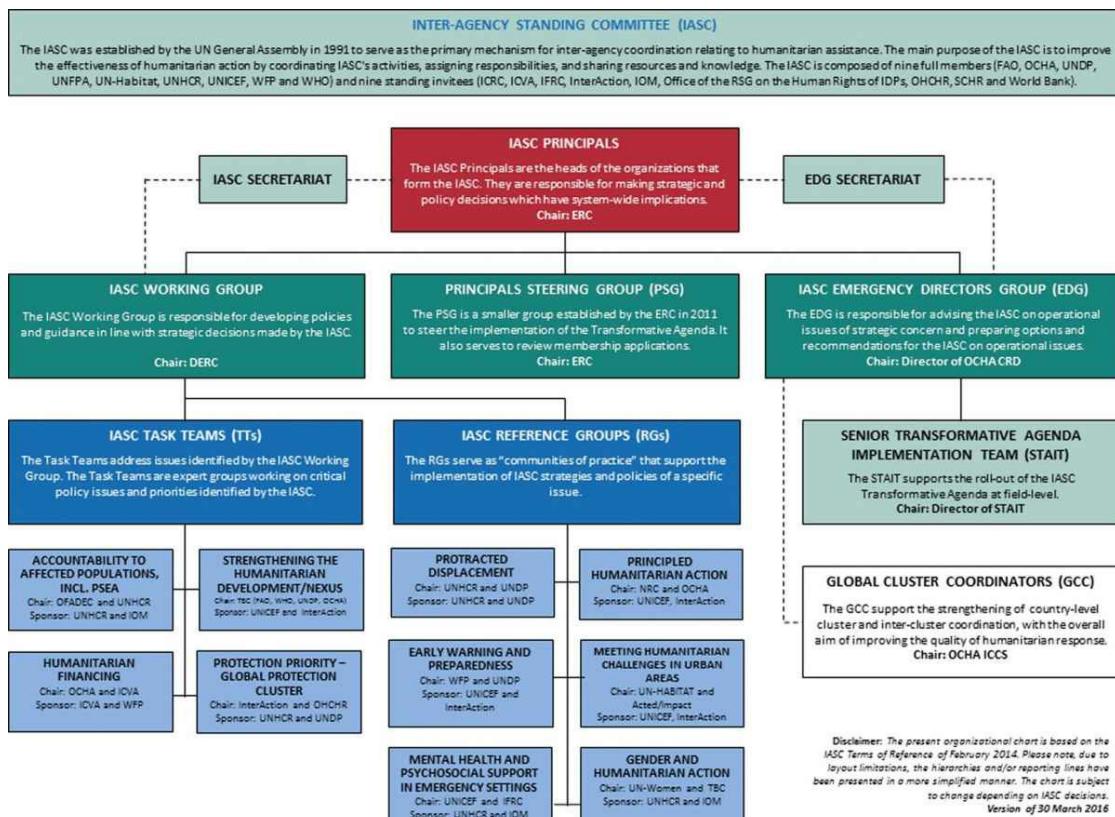


FIGURE 8.1 The IASC organizational chart.

The Executive Committee on Humanitarian Affairs (ECHA)

ECHA was created by the UN Secretary General to enhance coordination among UN agencies working on humanitarian affairs issues. ECHA meets on a monthly basis in New York to add a political and peacekeeping dimension to humanitarian consultations.

The UNOCHA Donor Relations Section

The UNOCHA Donor Relations Section (DRS) is the focal point for all relations with donors, particularly for funding-related issues. DRS advises the senior management team on policy issues related to interaction with donors and resource mobilization. In addition, it plays a key role in facilitating the interaction of all UNOCHA entities with donors, both at headquarters and in the field level.

The Coordination and Response Division

The Coordination and Response Division (CRD) was created in 2004 by joining the former New York-based Humanitarian Emergency Branch and the Geneva-based Response Coordination Branch. The CRD is responsible for providing disaster-related direction, guidance, and support to the ERC, the UN Resident/Humanitarian Coordinators, and UNOCHA's field offices (including the deployment of extra personnel as necessary or emergency cash grants).

The UNOCHA Emergency Services Branch (ESB)

Based in Geneva, the UNOCHA Emergency Services Branch (ESB) was created to expedite the provision of international humanitarian assistance. The ESB develops, mobilizes, and coordinates the deployment of UNOCHA's international rapid response "tool kit"—the expertise, systems, and services that aim to improve humanitarian assistance in support of disaster-afflicted countries. The ESB's humanitarian response activities include the coordination of disaster response and assessment (UNDAC), the setting of international urban search and rescue standards (INSARAG), and the establishment of OSOCCs.

The *Field Coordination Support Section (FCSS)* was established within the ESB in 1996 to support national governments and the UN Resident Coordinators in developing, preparing, and maintaining "standby capacity" for rapid deployment to sudden-onset emergencies to conduct rapid needs assessments and coordination. The FCSS manages several programs and offices to improve international disaster coordination and cooperation, including the following:

- *The United Nations Disaster Assessment and Coordination (UNDAC) Team.* The UNDAC team is made up of disaster management specialists selected and funded by the governments of UN member states, UNOCHA, UNDP, and operational humanitarian UN agencies (such as WFP, UNICEF, and WHO). It provides rapid needs assessments and supports national authorities and the UN Resident Coordinator in coordinating international relief. UNDAC teams are on permanent standby status so that they can deploy within hours.
- *The International Search and Rescue Advisory Group (INSARAG).* INSARAG is an intergovernmental network within the UN that manages urban search-and-rescue (USAR) and related disaster-response issues. It promotes information exchange, defines international USAR standards, and develops methodologies for international cooperation and coordination in earthquake response.
- *The Virtual On-Site Operations Coordination Centre (Virtual OSOCC).* The Internet has made it possible for humanitarian relief agencies to share and exchange disaster information continuously and simultaneously, and between any locations where Internet access can be obtained. The Virtual OSOCC is a central repository of information maintained by UNOCHA that facilitates this exchange of information with NGOs and responding governments. The information is stored on an interactive web-based database, where users can comment on existing information and discuss issues of concern with other stakeholders.
- *The Surge Capacity Project (including the Emergency Response Roster).* UNOCHA's Surge Capacity Project seeks to ensure that UNOCHA always has the means and resources to rapidly mobilize and deploy staff and materials to address the needs of countries affected by sudden-onset emergencies. The Emergency Response Roster (ERR), which became active in June 2002, aims to rapidly deploy UNOCHA staff to sudden-onset emergencies to conduct assessments and establish initial coordination mechanisms. As of June 2016 there were 45 staff included in the ERR, each

deployable within 48 hours of a request for their services through a deployment methodology based on the UNDAC model. Staff serve on the roster for 6-month rotations, and typically deploy for 6–8 weeks.

Established by the IASC in 1995, the *Military and Civil Defense Unit (MCDU)* supports humanitarian agencies by providing military and/or civil defense assets. The MCDU conducts civil-military coordination courses and coordinates UN participation in major humanitarian emergency exercises. The MCDU also maintains the UN's Central Register, which is a database of noncommercial, governmental, and other resources that may be called on for humanitarian response and includes a full range of equipment and supplies, teams of experts, and disaster-response contacts.

The *Logistics Support Unit (LSU)* manages stocks of basic relief items that can be dispatched immediately to disaster- or emergency-stricken areas. The stockpile, which is located at the UN Humanitarian Response Depot in Brindisi, Italy, includes nonfood, nonmedical relief items (such as shelter, water purification and distribution systems, and household items) donated by UN member governments. The LSU is also involved in other logistical challenges, such as designing contingency plans for the rapid deployment of emergency relief flights and providing interface on logistical matters with other humanitarian agencies (such as WFP, WHO, UNHCR, IFRC, and ICRC). The LSU participates in the operation of a UN Joint Logistics Center and has co-sponsored an effort to adopt a UN-wide system for tracking relief supplies and common procedures for air operations. Finally, the LSU contributes information to the CRR related to stockpiles and customs facilitation agreements (which helps speed up the delivery of relief items).

The *Environmental Emergencies Section*, or the Joint UN Environmental Programme (UNEP)/UNOCHA Environment Unit, serves as the integrated UN emergency response mechanism that provides international assistance to countries experiencing environmental disasters and emergencies. The joint unit can rapidly mobilize and coordinate emergency assistance and response resources to countries facing environmental emergencies and natural disasters with significant environmental impacts. The unit performs several key functions geared toward facilitating rapid and coordinated disaster response, including the following:

- Monitoring
- Notification
- Brokerage
- Information clearinghouse
- Mobilization of assistance
- Assessment
- Financial assistance

UNOCHA Preparedness and Mitigation Measures

Although UNOCHA's efforts primarily focus on coordinating humanitarian emergency response, the agency also serves a risk-reduction function. For instance, UNOCHA representatives work with operational humanitarian

agencies to develop common policies aimed at improving how the humanitarian response network prepares for and responds to disasters. It also works to promote preparedness and mitigation efforts in member states to decrease vulnerability. CRD and ESB work closely with the UN Development Programme, other UN programs as necessary, and outside organizations on various projects and activities to increase working relationships with national governments and apply lessons learned from completed disaster responses.

UNOCHA's Geneva offices are continually monitoring geologic and meteorological conditions, as well as major news services, for early recognition or notification of emerging disasters. Working with UN resident coordinators, country teams and regional disaster-response advisers, UNOCHA maintains close contact with disaster-prone countries in advance of and during disaster events. UNOCHA's Regional Disaster Response Advisers work with national governments to provide technical, strategic, and training assistance. They also provide this assistance to other UN agencies and regional organizations to improve international disaster management capacity.

UNOCHA Information Tools and Services

Clearly, information is key to disaster management, and information must be timely and accurate to be useful. This is especially true in the case of early warning and disaster prevention initiatives. UNOCHA maintains several information management activities in support of its humanitarian efforts, and provides systems to collect, analyze, disseminate, and exchange information. These functions are performed jointly by the Early Warning and Contingency Planning Unit, the ReliefWeb project, the Field Information Support Project, and the Integrated Regional Information Networks.

Department of Economic and Social Affairs

The Department of Economic and Social Affairs (DESA) is another component within the Secretariat that addresses disaster management, primarily in regards to pre-disaster capacity building. DESA addresses a full range of issues under three general areas:

- It compiles, generates, and analyzes a wide range of economic, social, and environmental data and information from which member states draw to review common problems and evaluate policy options.
- It facilitates the negotiations of member states in many intergovernmental bodies on joint courses of action to address ongoing or emerging global challenges.
- It advises national governments on translating UN-developed policy frameworks into country-level programs and, through technical assistance, helps build national capacities.

This final area is where DESA addresses disaster management activities within its Division for Sustainable Development. As part of this effort, DESA launched a plan of action during the 2002 World Summit on Sustainable Development in Johannesburg, South Africa, that included commitments to

disaster and vulnerability reduction.

The UN Centre for Regional Development (UNCRD) is another component of DESA that addresses disaster management issues. Through its headquarters in Nagoya, Japan, and its regional offices in Nairobi, Kenya, and Bogotá, Colombia, UNCRD supports training and research on regional development issues and facilitates information dissemination and exchange. UNCRD maintains a Disaster Management Planning Office in Hyogo, Japan, that researches and develops community-based, sustainable projects for disaster-management planning and capacity building in developing countries. Examples of ongoing projects maintained by the Hyogo office include the Housing Earthquake Safety Initiative in Algeria, Indonesia, Nepal, and Peru, and the School Earthquake Safety Initiative in Fiji, India, Indonesia, and Uzbekistan.

The Regional Commissions

Five regional economic commissions are within the Economic and Social Council. The secretariats of these regional commissions are part of the UN Secretariat and perform many of the same functions (including the disaster management functions just listed). The five commissions promote greater economic cooperation in the world and augment economic and social development. As part of their mission, they initiate and manage projects that focus on disaster management. While their projects primarily deal with disaster preparedness and mitigation, they also work in regions that have been affected by a disaster to ensure that economic and social recovery involves adequate consideration of risk-reduction measures. These are the five regional commissions:

- The Economic and Social Commission for Asia and the Pacific (ESCAP)
— www.unescap.org
- The Economic Commission for Latin America and the Caribbean (ECLAC)
— www.eclac.cl/
- The Economic Commission for Europe (ECE)— www.unece.org/
- The Economic Commission for Africa (ECA)— www.uneca.org/
- The Economic and Social Commission for Western Asia (ESCWA)
— www.escwa.org.lb

The United Nations Children's Fund

Like most other major UN agencies, the UN Children's Fund (UNICEF, formerly known as the United Nations International Children's Emergency Fund) was established in the aftermath of World War II. Its original mandate was to aid the children suffering in postwar Europe, but its mission has been expanded to address the problems that affect poor children throughout the world. UNICEF is mandated by the General Assembly to serve as an advocate for children's rights, to ensure that each child receives at least the minimum requirements for survival, and to increase their opportunities for a successful future. Under the Convention on the Rights of the Child (CRC), a treaty ratified

by 194 countries (all countries at the time with the exception of the United States), UNICEF holds wide-reaching legal authority to carry out its mission.

Before the onset of disasters, it is not uncommon for UNICEF to have established itself as a permanent in-country presence, with regular budgetary resources. In the situations of disaster or armed conflict where this is the case, UNICEF is well poised to serve an immediate role as aid provider to its specific target groups. This rapid response is important because young mothers and children are often the most marginalized groups in terms of aid received. UNICEF works on a regular basis to ensure that children have access to education, healthcare, safety, and protected child rights. In the response and recovery periods of humanitarian emergencies, these roles are merely expanded to suit the rapidly extended requirements of victims. In countries where UNICEF has not yet established a permanent presence, the form of aid is virtually the same; however, the timing and delivery are affected, and reconstruction is not nearly as comprehensive.

UNICEF maintains that humanitarian assistance should include programs aimed specifically at child victims. Relief projects generally work to provide a rapidly needed response in the form of immunizations, water and sanitation, nutrition, education, and health. Women are recipients of this aid as well because UNICEF considers them to be vital in the care of children. UNICEF also works through recovery and reconstruction projects, providing for the basic rights of children. UNICEF is currently active in more than 190 countries. (Related video: UNICEF—In Myanmar, the Disaster of Surviving the Disaster. <http://bit.ly/2856qRj>; UNICEF—Protecting Children in Aftermath of Haiti's 'Double Disaster.' <http://bit.ly/1r3tgXQ>; UNICEF—Sheltering Children from Disaster in Tajikistan. <http://bit.ly/24k58xh>.)

The World Food Programme

The World Food Programme (WFP) is the arm of the UN tasked with reacting to hunger-related emergencies throughout the developing world. The WFP was created late in 1961 by a resolution adopted by the UN General Assembly and the UN Food and Agriculture Organization (FAO). Chance enabled the program to prove the necessity of their existence when the WFP provided relief to more than 5 million people several months before they were deemed officially operational in 1963. In the year 2014, WFP fed more than 80 million people in 82 countries.

Because food is a necessity for human survival, it is a vital component of development. The WFP works throughout the world to assist the poor who do not have sufficient food to survive "to break the cycle of hunger and poverty." Hunger alone can be seen as a crisis, given that in 2016 more than 795 million people across the globe were receiving less than the minimum standard requirement of food for healthy survival (WFP, 2016). Hunger is often associated with other crises, including drought, famine, and human displacement, among others.

In rapid-onset events such as natural disasters, the WFP is activated as a

major player in the response to the immediate nutritional needs of the victims. Food is transported to the affected location and delivered to storage and distribution centers. The distribution is carried out according to pre-established needs assessments performed by UNOCHA and the UNDP. The WFP distributes food through contracted NGOs who have vast experience and technical skills required to plan and implement such projects of transportation, storage, and distribution. The principal partners in their planning and implementation are the host governments (who must request the aid of the WFP to begin with, unless the situation is a CHE where there is no established government, and the UN Secretary General makes the request). The WFP works closely with all responding UN agencies to coordinate an effective and broad-reaching response because food requirements are so closely linked to every other vital need of disaster victims.

In the aftermath of disasters, during the reconstruction phase, it is often necessary for the WFP to remain an active player through continued food distribution. Rehabilitation projects are implemented in a way that fosters increased local development, and include providing food aid to families, who as a result will have extra money to use in rebuilding their lives, and food-for-work programs, which break the chains of reliance on aid as well as providing an incentive to rebuild communities.

The World Health Organization

The idea for the World Health Organization (WHO) was proposed during the original meetings to establish the UN system in San Francisco in 1945. In 1946, at the United Health Conference in New York, the WHO constitution was approved, and on April 7 (World Health Day), it was signed and made official. Like the WFP, WHO proved its value by responding to an emergency (a cholera epidemic in Egypt) months before it was an officially recognized organization.

WHO was established to serve as the central authority on sanitation and health issues throughout the world. It works with national governments to develop medical capabilities and healthcare and assist them in the suppression of epidemics. WHO supports research for the eradication of disease and provides expertise on these subjects when requested. It also provides training and technical support and develops standards for medical care.

In the event of a disaster, WHO responds in several ways that address the health of victims. Most important, it provides ongoing monitoring of diseases traditionally observed within the unsanitary conditions of disaster aftermath. WHO also provides technical assistance to the responding agencies and host governments that are establishing disaster medical capabilities and serves as a constant source of expertise as needs arise. (Related video: WHO—Put Health First in Emergencies. <http://bit.ly/24k5AvA>.)

Critical Thinking

Is the United Nations the organization best suited to coordinate the response to

international disasters? Why or why not? If not, who do you believe should be tasked with coordination?

Nongovernmental Organizations

The number of nongovernmental organizations (NGOs) focusing on international humanitarian relief has grown exponentially in the past few decades. These organizations have come to play a vital role in the response to and recovery from disasters, filling gaps left by national and multilateral organizations. They have significantly improved the ability of international relief efforts to address the needs of victims with a diverse range of skills and supplies. Some of the larger NGOs, like the International Committee of the Red Cross (ICRC), have established an international presence as wide-reaching as that of the UN and have developed strong local institutional partnerships and a capacity to respond almost immediately with great effectiveness. International and grassroots-level organizations alike have achieved such great success in their operations that major bilateral development agencies (e.g., the US Agency for International Development Office of Foreign Disaster Assistance [USAID/OFDA]) and international organizations (e.g., the United Nations) channel assistance through these organizations as an established component of their ongoing and disaster-related relief efforts.

There are several classifications of humanitarian organizations. The following broad categorical definitions are widely recognized by the international community of disaster risk management stakeholders. Note that these are not definitive categories into which each organization will neatly fit, but they have become part of standardized nomenclature in disaster response:

- *Nongovernmental organization (NGO)*. The general term for an organization made up of private citizens, with no affiliation with a government of any nation other than the support from government sources in the form of financial or in-kind contributions. These groups are motivated by greatly varying factors, ranging from religious beliefs to humanitarian values. NGOs are considered national if they work in one country, international if they are based out of one country but work in more than four countries, and multinational if they have partner organizations in several countries. Oxfam and the ICRC are examples of multinational NGOs. NGOs can be further defined according to their functionality. Examples of these would be the religious groups, such as the Catholic Church; interest groups, such as Rotary International; residents' organizations; occupational organizations; educational organizations; and so on.
- *Private voluntary organization (PVO)*. An organization that is nonprofit, tax-exempt, and receives at least a part of its funding from private donor sources. PVOs also receive some degree of voluntary contributions in the form of cash, work, or in-kind gifts. This classification is steadily being grouped together under the more general NGO classification. It should be mentioned that although all PVOs are NGOs, the opposite is not true.
- *International organization (IO)*. An organization with global presence and influence. Although both the UN and ICRC are IOs, only the ICRC could be considered an NGO. There exists international law providing a legal

framework under which these organizations can function.

- *Donor agencies.* Private, national, or regional organizations whose mission is to provide the financial and material resources for humanitarian relief and subsequent rehabilitation. These donated resources may go to other NGOs, other national governments, or to private citizens. Examples of donor agencies are USAID, the European Community Humanitarian Organization (ECHO), and the World Bank.
- *Coordinating organizations.* Associations of NGOs that coordinate the activities of hundreds of preregistered member organizations to ensure response with maximized impact. They can decrease the amount of overlap and help distribute assistance to the greatest range of victims. Also, they have the ability to analyze immediate needs assessments and recommend which member organizations would be most effective in response. Examples of coordinating organizations include InterAction and the International Council for Voluntary Agencies (ICVA).

NGOs bring to the field several resources. First, they are well regarded as information-gathering bodies and thus are vital in establishing accuracy in the development of damage and needs assessments. They tend to provide a single skill or group of specific technical skills, such as the medical abilities of Medicin sans Frontiers (MSF, Doctors without Borders) or Oxfam's ability to address nutritional needs. The sheer number of helping bodies that are provided by the involvement of NGOs allows for a greater capability to reach a larger population in less time. Finally, the amount of financial support provided as a result of the fundraising abilities of NGOs brings about much greater cash resources to address the needs of victims.

These organizations can be characterized by several characteristics they have in common:

- They value their independence and neutrality
- They tend to be decentralized in their organizational structure
- They are committed
- They are highly practice-oriented

The most well-known and most widely established humanitarian NGO is the Red Cross, given their long history and wide international presence. The International Red Cross is described below.

The International Red Cross

The International Red Cross/Red Crescent Movement consists of the International Federation of Red Cross and Red Crescent Societies (IFRC) and the International Committee of the Red Cross (ICRC). The concept of the Red Cross was initiated by Henry Dunant in 1859, following a particularly brutal battle in Italy that he witnessed. Dunant gathered a local group to provide care for the battle-wounded through medical assistance, food, and ongoing relief. Upon returning to Switzerland, he began the campaign that led to the International Committee for Relief of the Wounded in 1863 and, eventually, the ICRC. The Committee, and their symbol of a red cross on a white background,

has become the standard of neutral wartime medical care of wounded combatants and civilians.

The IFRC was founded in 1919 and has grown to be the world's largest humanitarian organization. After World War I, American Red Cross War Committee president Henry Davison proposed a creation of a League of Red Cross Societies so the expertise of the millions of volunteers from the wartime efforts of the ICRC could be used in a broader scope of peacetime activities. Today, the IFRC includes 190 member societies, a Secretariat in Geneva, and more than 60 additional delegations dispersed throughout the world.

The IFRC conducts complex relief and recovery operations in the aftermath of disasters throughout the world. Their four areas of focus include promoting humanitarian values, disaster response, disaster preparedness, and health and community care. Through their work, they seek to "improve the lives of vulnerable people by mobilizing the power of humanity," as stated in their mission. These people include those who are victims of natural and man-made disasters and post-conflict scenarios.

Like the UN, the IFRC is well established in most countries throughout the world and is well poised to assist in the event that disaster strikes. Volunteers are continuously trained and utilized at the most local levels, providing a solid knowledge base before a major need presents itself. Cooperation among groups, through the federation, provides an enormous pool of people and funds from which to draw when local resources are exhausted.

When a disaster strikes and the local capacity is exceeded, an appeal by that country's national chapter is made for support to the Federation's Secretariat. As coordinating body, the Secretariat initiates an international appeal for support to the IFRC and many other outside sources and provides personnel and humanitarian aid supplies from its own stocks. These supplies, which can be shipped in if not locally available, pertain to needs in the areas of health, logistics and water specialists, aid personnel, and relief management.

The appeal for international assistance is made an average of 30 times per year, and these assistance projects can continue for years. Long-term rehabilitation and reconstruction projects, coupled with the goal of sustainable development and increased capacity to handle future disasters, have become the norm in regards to major disasters in the poorer countries. The following is how the IFRC responds to international disasters.

Depending on the complexity of the required response, a Field Assessment and Coordination Team (FACT) may be deployed to assist the local chapter in determining the support needs for the event. The teams, which are deployable to any location with only 12–24 hours' notice, consist of Red Cross/Red Crescent disaster managers from throughout the IFRC, bringing with them skills in relief, logistics, health, nutrition, public health, epidemiology, water and sanitation, finance, administration, and psychological support. The team works in conjunction with local counterparts and host-government representatives to assess the situation and determine what the IFRC response will consist of. An international appeal is drafted, and then launched, by the Secretariat in Geneva. The teams stay in-country for approximately 2–4 weeks to coordinate the

initiation of relief activities. Once the effort has stabilized and has become locally manageable, the FACT concedes its control to the local Red Cross headquarters.

In 1994, following a spate of notably severe disasters (i.e., the Armenian earthquake, the Gulf War Kurdish refugee problem, and the African Great Lakes Region crisis), the IFRC began to develop an Emergency Response Unit (ERU) program to increase disaster response efficiency and efficacy. These ERUs are made up of pre-established supplies, equipment, and personnel, who respond as a quick-response unit on a moment's notice and are trained and prepared to handle a much wider range of scenarios than before. This concept, similar to the UNDP Emergency Response Division (ERD), has already proven effective in making IFRC response faster and better, through several deployments, including Hurricane Mitch in Honduras. The teams, upon completion of their response mission, remained in-country to train the locals in water and sanitation issues, thus further ensuring the sustainability of their efforts. ERU teams are most effective in large-scale, sudden-onset, and remote disasters. ERU types include:

- Logistics
- IT & Telecommunications
- Water & Sanitation
- Basic Health Care
- Referral Hospital
- Rapid Deployment Hospital
- Relief
- Base Camp

In 2010, the IFRC launched “Strategy 2020” to guide the organization’s efforts though the decade. This strategy focuses on three strategic aims:

1. Save lives, protect livelihoods, and strengthen recovery from disasters and crises.
2. Enable healthy and safe living.
3. Promote social inclusion and a culture of nonviolence and peace.

The strategy directs the organization to pursue three “enabling actions” to deliver these three strategic aims, including:

1. Build strong National Red Cross and Red Crescent Societies.
2. Pursue humanitarian diplomacy to prevent and reduce vulnerability in a globalized world.
3. Function effectively as the International Federation.

(Related video: 2020 and Beyond: Is the Humanitarian Community Prepared for the Future? <http://bit.ly/285e3Yb>. Strategy 2020, Saving Lives, Changing Minds: <http://bit.ly/20UWnZG>, Asian-Pacific Voices. <http://bit.ly/1WxUnIm.>)

As a result of this strategy and the Strategy 2010 that preceded it, the IFRC has become increasingly engaged in disaster-risk reduction and emergency preparedness efforts and continues to promote hazard mitigation practices in the communities where they operate. These activities, which focus on consequence reduction and working toward better disaster event prediction and prevention methods, have become more central to the goal of local Red

Cross/Red Crescent Society programs.

The first of these three strategic aims is most relevant to the practice of international disaster management. The Strategy 2020 describes their pre- and post-disaster action in this effort as follows:

Preparing and Responding to Disasters and Crises

Following a disaster or in a crisis situation, humanitarian assistance and protection must be appropriate to the requirements that have been identified through timely and specific assessments. Any humanitarian assistance must be sensitive to gender, age, and other socio-economic considerations, as well as being proportionate to the magnitude of the situation. Assistance must be provided first to the most vulnerable people and delivered in a way that respects their dignity. Being an integral part of communities allows us a continuous understanding of their needs, vulnerabilities, and capacities. Systematic disaster and crisis management starts with preparedness for early action by trained and organized volunteers. It also includes maintaining and prepositioning contingency stocks of essential supplies, and optimizing logistics and communications. Reliable early-warning systems are instrumental in saving the maximum number of lives, and protecting assets and livelihoods. Additionally, our disaster and crisis response includes providing essential healthcare, food and nutrition, and water and sanitation. We help restore family links where these have been disrupted. We also lead the coordination of emergency shelter provision, as part of the agreed division of labor within the humanitarian assistance system. Appropriate laws are crucial to ensure the speed and effectiveness of humanitarian assistance. Therefore, we emphasize the importance of national legal preparedness and international legal cooperation through the development and promotion of disaster laws, principles, and rules. These seek to reduce operational barriers and strengthen the role of communities to ensure that relief and recovery measures are carried out efficiently in a manner respectful of the dignity and rights of affected people. We also promote pre-disaster cooperation arrangements that facilitate and regulate international assistance in order to enhance preparedness measures and increase the appropriateness and predictability of provision.

Recovering from Disasters and Crises

The impact of a disaster or crisis can be reduced if the situation is stabilized as quickly as possible. This allows people to start rebuilding their lives and communities. Depending on the specific requirements, our recovery assistance aims to prevent further damage and loss, repair essential services, protect health, provide psycho-social support, restore livelihoods, and enhance food security. Recovery is carried out in such a way so as to rebuild more inclusive societies and reduce vulnerability to future disasters. Thus, recovering communities are made safer than before.

Our Disaster Management System

As they are closest to the communities at risk of disasters and crises, building local and national response capacities is a primary responsibility of National Societies. However, we know that major disasters and crises can sometimes overwhelm even those who are best prepared. That is why National Societies have committed to support each other and have built up emergency response capabilities to do so. The Secretariat has a constitutional obligation “to organize, coordinate, and direct international relief action” as a core service to members of the IFRC. Drawing on the complementary capacities of National Societies, we ensure that effective tools and reliable surge capacities are always available, in a seamless arrangement that connects global, regional, national, and local capabilities. This gives us the confidence to handle the expected worldwide increase in the number and magnitude of major disasters. The ICRC and the IFRC work together concurrently to maintain substantial capacities to protect and assist people affected by armed conflict and violence. ([IFRC, 2010](#)) (Related video: IFRC Disaster Response in Haiti. <http://bit.ly/1Uw8k6e>.)

Critical Thinking

- Should nongovernmental organizations be required to adhere to the UN or another governmental coordination system that is in place during the response to international disasters? Why or why not?
- What are the major risks for an NGO that refuses to participate in the coordination mechanism in place in the disaster-affected country or region? What does it gain and what does it lose by choosing to participate?

Assistance Provided by the US Government

US Agency for International Development

The United States has several means by which it provides assistance to other nations requiring aid in the aftermath of a disaster, accident (transportation-based, nuclear, biological, chemical, or other), or conflict. The US agency tasked with providing development aid to other countries, the US Agency for International Development (USAID), has also been tasked with coordinating the US response to international disasters. USAID was created in 1961 through the Foreign Assistance Act, which was drafted to organize US foreign assistance programs and separate military and nonmilitary assistance. One branch of USAID, the Bureau for Democracy, Conflict, and Humanitarian Response (DCHA), manages the various mechanisms with which the United States can respond to humanitarian emergencies of all types. The office under DCHA that most specifically addresses the needs of disaster and crisis victims by coordinating all nonfood aid provided by the government is the Office of US Foreign Disaster Assistance (OFDA) ([Fig. 8.2](#)).

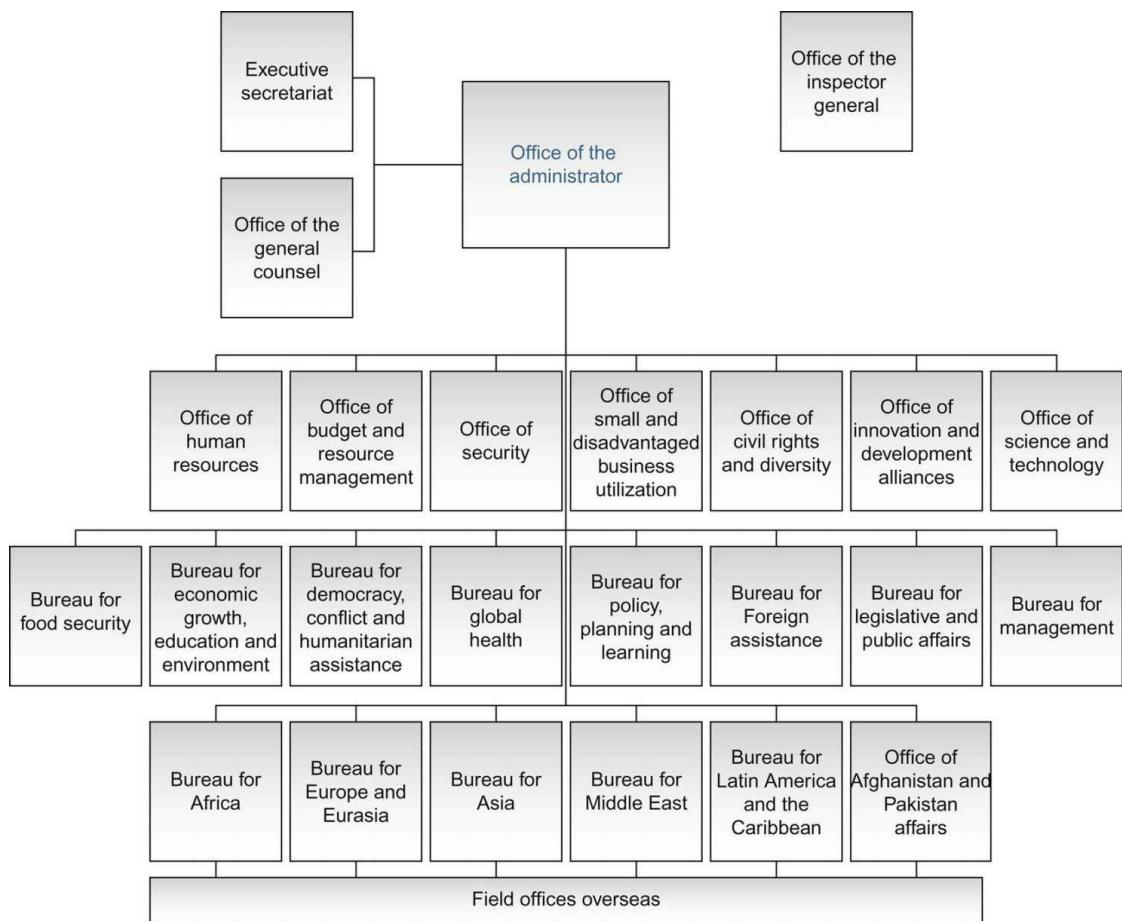


FIGURE 8.2 The USAID organizational chart.

Office of Foreign Disaster Assistance

Office of Foreign Disaster Assistance (OFDA) is divided into three distinct subunits: Operations Division (OPS); Program Support Division (PS); and Disaster Response and Mitigation (DRM). The Disaster Response and Mitigation Division is responsible for coordinating the provision of humanitarian assistance and relief supplies. The Operations Division develops and manages logistical, operational, and technical support for field offices and disaster responses, including Urban Search & Rescue (USAR) teams, Disaster Assistance Response Teams (DARTs), and Response Management Teams (RMTs). The Program Support Division provides programmatic and administrative support, including budget and financial services, procurement planning, contracts and grants administration, training support, information technology, communications support, and information services.

The administrator of USAID holds the title of President's Special Coordinator for International Disaster Assistance. When a disaster is declared in a foreign nation by the resident US ambassador (or by the Department of State, if one does not exist), the USAID administrator receives an appeal for help. This can be done when three conditions are met: the magnitude of the disaster has

overwhelmed a country's local response mechanisms; the government has requested assistance or will at least accept it; and it is in the interest of the US government to assist. OFDA is authorized to immediately disburse \$50,000 in emergency aid to the US Embassy to be spent at the discretion of the ambassador for immediate relief, and given that the disaster satisfies three criteria: (1) the magnitude of the disaster is beyond the capacity of the host country to respond; (2) the host country accepts, or is willing to accept, assistance; and (3) a response is in the best interest of the US government. OFDA also can immediately send regional advisors with temporary shelter and medical aid supplies from one of four OFDA stockpiles in Guam, Italy, Honduras, and the United States ([Fig. 8.3](#)).

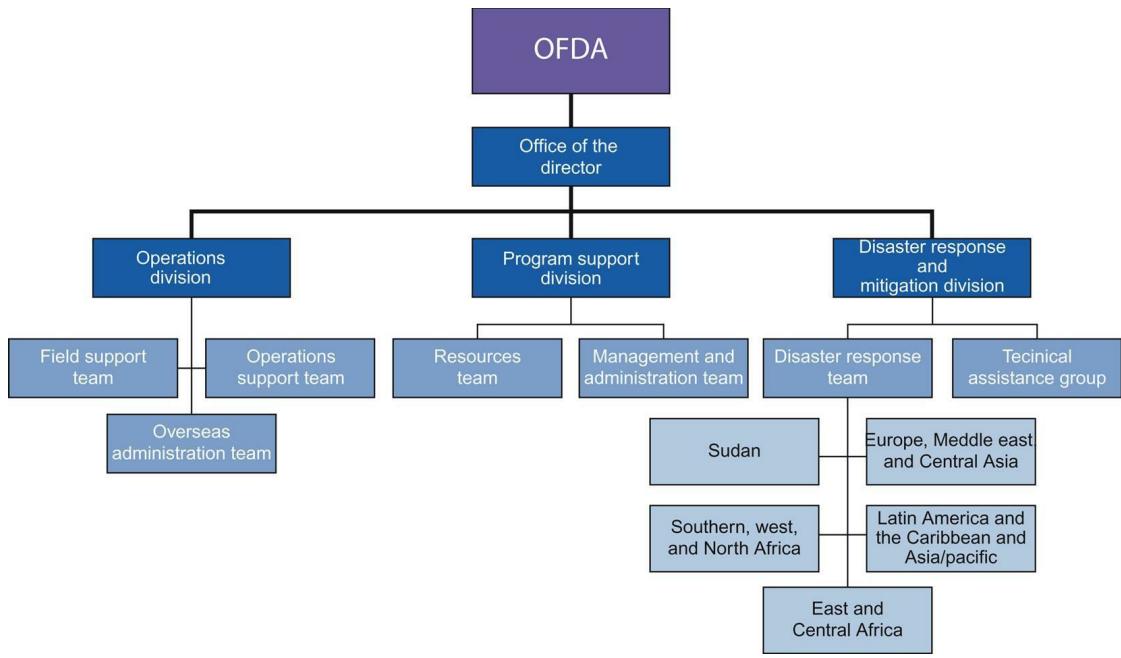


FIGURE 8.3 The OFDA organizational chart.

If the disaster is considerable in size, the US ambassador or USAID Mission Director posted in the affected country will appoint a Mission Disaster Relief Officer to oversee the developing response effort. A Disaster Assistance Response Team (DART) is deployed to the country to assess the damages and recommend the level of assistance that should be made by the US government. DARTs work quickly to develop a strategy to coordinate US relief supplies; provide operational support; coordinate with other donor countries, UN agencies, NGOs, and the host government; and monitor and evaluate projects carried out with US funds. In the largest of disasters, Response Management Teams (RMTs) may be established in both Washington, DC and the disaster site to coordinate and offer administrative assistance and communication for the several DARTs that would be deployed.

OFDA developed a Technical Assistance Group (TAG) to increase its capabilities in planning and programming. TAGs consist of scientists and specialists in agriculture and food security, emergency and public health, water and sanitation, geoscience, climate, urban planning, contingency planning, cartography, and so on. TAGs work with DARTS and RMTs in response, as well as USAID development missions in preparation and mitigation for future disasters.

In addition to the direct aid and logistical and operational support offered, OFDA provides grants for relief assistance projects. These projects are carried out primarily by PVOs and NGOs, as well as IOs, the UN, and other various organizations (such as a pilot's club that is hired to transport supplies). Not all this monetary aid goes to response, however. The DRM works to facilitate projects that aim to reduce the impact of disasters before they happen again. These types of projects seek to empower national governments to make them less likely to need international assistance in subsequent events. All these

organizations are monitored carefully by OFDA to ensure that they are working efficiently and are spending monetary resources sensibly. (Related video: USAID's Office of Foreign Disaster Assistance. <http://bit.ly/1PmFG8I>).

Other USAID Divisions

Under the USAID DCHA, several other offices provide humanitarian aid. The Office of Food for Peace (FFP) handles all the US government's food-assistance projects (US food aid is categorized as Title II or Title III, with the first having no repayment obligations and the second considered a bilateral loan). The Office of Transition Initiatives (OTI) works in post-conflict situations to help sustain peace and establish democracy. The Office of Conflict Management and Mitigation (CMM) supports early responses to address the causes and consequences of conflict and war.

The Office of Civilian-Military Cooperation (CCA) operates within USAID's Bureau for Democracy, Conflict, and Humanitarian Assistance (DCHA) and helps to build partnerships for humanitarian relief with US Department of Defense officials and offices for planning, training, mitigation, response, and recovery. The Department of State Bureau for Population, Refugees, and Migration (PRM) provides monetary grants to NGOs, PVOs, IOs, and the UN to respond to emergency refugee emergencies. A good portion of this assistance goes directly to the UNHCR. The Department of Defense (DOD) responds through its Office of Peacekeeping and Humanitarian Affairs (PK/HA). It is important to note that the developed nations of the world are highly unlikely to receive US assistance on the level that is provided to the developing nations.

The US Military

The US military often is involved in relief efforts of natural and technological disasters and Complex Humanitarian Emergencies. The involvement of the military, a well-funded and equipped force whose primary function is national defense, brings about an entirely new perspective on the area of operations. It often is argued that nobody is better equipped to handle disasters than the military, with their wide assortment of heavy equipment, enormous reserve of trained personnel, and common culture of discipline and mission-oriented standard operation; however, it is also said that the military is a war agency, not a humanitarian assistance agency, and that these two organizational ideals are too fundamentally and diametrically opposed in practice to allow for effective military involvement.

The assistance of the military normally is requested by USAID/OFDA through the DOD Office of Political/Military Affairs. The chain of command for military operations begins with the President of the United States and the Secretary of Defense, collectively referred to as the National Command Authority (NCA). The NCA, which directs all functions of the US military, is advised by the Joint Chiefs of Staff (JCS) of the Army, Navy, Air Force, and Marines.

The US military is heavily involved in the response to international disasters through organized operations termed Foreign Humanitarian Assistance (FHA) or Humanitarian Assistance Operations (HAO). FHAs are authorized by the DOD Office of Political/Military Affairs (DODPM) at the request of OFDA (the president, as commander-in-chief, gives final authorization for any support operation). Assistance may be provided in the form of physical or technical support, such as logistics, transportation, communications, relief distribution, security, and emergency medicine. In emergencies of natural or man-made origin that do not involve conflict, the role of the military is to provide support, rather than leadership, to the national government and the overall relief community.

The military is known for its self-contained operational abilities, arriving on-scene with everything they need, so to speak. Usually, they provide more than adequate personnel and supplies for the mission they were called to act upon. Once in-country, they work under the strict guidelines of Force Protection (enforced security of all military and civilian personnel, equipment, and facilities associated with their mission) and Rules of Engagement (ROE, a structured, pre-established guideline of "circumstances and limitations under which the military will initiate or continue combat engagement"). The ROE dictate military action in both peacekeeping and disaster operations.

If a particular command unit is tasked with assisting a relief operation, they may deploy a Humanitarian Assistance Survey Team (HAST) to conduct a needs assessment, which relates to the specific functions the military is suited to address. These assessments are occasionally much different than those generated by more humanitarian-based organizations, such as the UN or OFDA, because the military operates in such a fundamentally different fashion. The concerns of the HAST tend to focus on the military support requirements and the logistical factors involving the deployment of troops. A Joint Task Force (JTF) will be established soon after to handle the management and coordination of military personnel activities, with a commander for the JTF designated as the person in charge of the operation on-site; however, if an operation involves only one military service, or is minimal in size, a JTF may not be needed.

One of the main roles of the JTF is to establish a Civil Military Operations Center (CMOC). This center effectively functions to coordinate the military support capabilities in relation to the overall response structure involving all other players involved. The CMOC mobilizes requests for assistance from OFDA, the UN, NGOs, and the host government. All inter-military planning is conducted through this center, including those operations involving cargo transportation and food logistics. This center is the primary node of information exchange to and from the JTF. CMOCs have taken on expanded responsibility in the past, including the reestablishment of government and civil society and the repair or rehabilitation of critical infrastructure.

Critical Thinking

- The Posse Comitatus Act limits the involvement of the US military in

domestic operations, but not international disasters. Do you believe that the US military would be better equipped than DHS to lead the federal response to domestic disasters? Why or why not?

- What aspects of the military make it so effective overseas?
- Why do you think OFDA is a component of the US Department of State and not the Department of Homeland Security?

The International Financial Institutions

The international financial institutions (IFIs) provide loans for development and financial cooperation throughout the world. They exist to ensure financial and market stability and to increase political balance. These institutions are made up of member states, arranged on a global or regional basis, which work together to provide financial services to national governments through direct loans or projects. In the aftermath of disasters, it is common for nations with low capital reserves to request increased or additional emergency loans to fund the expensive task of reconstruction and rehabilitation. Without these IFIs, most developing nations would have no means with which to recover. The largest of these IFIs, the World Bank, and one of its subsidiaries, the International Monetary Fund (IMF), are detailed as follows. Other regional IFIs with similar functions include the Inter-American Development Bank (IDB), which works primarily in Central and South America, and the Asian Development Bank (ADB), based in Manila, Philippines, which works throughout the Asian continent.

The World Bank

The World Bank was created in 1944 to rebuild Europe after World War II. In 1947, France received the first World Bank loan of \$250 million for postwar reconstruction. Financial reconstruction assistance has been provided regularly since that time in response to countless natural disasters and humanitarian emergencies.

Today, the World Bank is one of the largest sources of development assistance. In the 2015 fiscal year, it committed almost \$60 billion in loans, funding hundreds of ongoing and new projects in scores of developing countries. The World Bank is owned collectively by 189 countries and is based in Washington, DC. It comprises several institutions referred to as the World Bank Group (WBG):

- International Bank for Reconstruction and Development
- International Development Association
- International Finance Corporation
- Multilateral Investment Guarantee Agency
- International Centre for Settlement of Investment Disputes

The World Bank's overall goal is to reduce poverty, specifically, to "individually help each developing country onto a path of stable, sustainable, and equitable growth, [focusing on] helping the poorest people and the poorest countries" (The [World Bank, 1998](#)). As disasters and CEs take a greater and greater toll on the economic stability of many financially struggling countries, the Bank is taking on a more central role in mitigation and reconstruction.

Developing nations, which are more likely to have weak disaster mitigation or preparedness capacity and therefore little or no affordable access to disaster insurance, often sustain a total financial loss. In the period of rehabilitation that

follows a disaster, loans are essential to the success of programs and vital to any level of sustainability or increased disaster resistance. The Bank lends assistance at several points along this cycle.

First, for regular financial assistance, the Bank ensures that borrowed funds are applied to projects that give mitigation a central role during the planning phase. It utilizes its privilege as financial advisor to guide planners, who otherwise might forego mitigation measures in an effort to stretch the loaned capital as far as possible. Ensuring that mitigation is addressed increases systems of prediction and risk analysis in World Bank-funded projects.

Second, the Bank has been working to provide lending, financial assistance and incentives, and direct technical assistance, to address disaster risk head on. In 2006, the World Bank Global Facility for Disaster Reduction and Recovery (GFDRR—formerly the Global Facility for Disaster Risk Reduction) was created to manage all disaster risk management programs and projects. This group helps to bring together experts from throughout the Bank's network to share global knowledge about risk reduction, and to ensure that both Bank staff and their national government counterparts have at their access the information they need to reduce disaster vulnerability for the long term. Between 2006 and 2011, the World Bank financed 113 disaster prevention and preparedness operations totaling \$7.9 billion in funds, and 68 disaster reconstruction operations totaling \$3.8 billion. Since that time, the disaster risk management portfolio has grown to \$5.7 billion (fiscal year 2015) (World Bank, 2016).

Since its inception, the World Bank has been heavily involved in national reconstruction efforts. Over time, these post-disaster programs have not only grown in number and scope, but have also shifted in focus from that of post-conflict scenarios to that of a more diverse hazard portfolio—with natural disasters emerging as the prominent instigating factor. The Bank has established and adjusted its policy on managing the post-disaster needs of member nations through successive policy adjustments that point to an evolution in thinking about how the bank assists its “customers” facing disasters.

The range of disaster events the Bank has addressed through its various response and reconstruction programs has grown over time. All Bank policy stipulates that post-disaster projects should concentrate on restoring assets and productivity levels, thereby focusing on reconstruction (with explicit specification that relief and consumption cannot be financed under the guiding theory that lending should be reserved for economically productive activities, thereby leaving relief managed by local groups, affected governments, bilateral relief programs, NGOs, and specialized relief organizations). Bank policy, in fact, restricts the Bank from participating in the financing of any of the following:

- Temporary shelter
- Search and rescue
- Evacuation
- Healthcare
- Food and water distribution

- Temporary sanitation
- Restoration of access to transport

Within the framework of these restrictions, the Bank is able to offer effective assistance to disaster-affected nations through a range of loan and technical assistance instruments. The current policy describes five forms of Bank emergency assistance: emergency recovery loans (ERLs) and credits, loan reallocation, the redesign of pipeline projects, new free-standing mitigation projects, and assessments. These and other related capabilities are grouped into the categories of Lending Instruments, Coordination, and Technical Assistance.

World Bank Lending Instruments

Between 1984 and 2011, the Executive Board of the World Bank has financed more than 700 projects involving the management of disasters in some capacity. Through these projects, a total of more than \$50 billion of bank lending was provided ([International Bank for Reconstruction and Development, 2012](#)).

Among these projects, the amount of disaster-related support ranges from a few thousand to a half billion dollars. While some projects were entirely devoted to natural disasters, such as the Emergency Recovery Loans (ERLs; described below), more than two-thirds involved disasters as a component of more comprehensive development goals. The various disaster-related loan instruments follow ([World Bank, 2011](#)).

The Emergency Recovery Loan Program

The Emergency Recovery Loan (ERL) is a loan instrument designed to reduce the time required to complete the project appraisal process in order to meet the disaster-affected borrowers' urgent needs. The goal of an ERL is to implement the funded emergency projects within a period of 2–3 years. Borrower nations are limited in how they can use ERL funds for reconstruction. Projects funded must be limited to the rapid restoration of physical structures and productive activities. Policy discourages the creation of permanent new institutions for project implementation, but limited changes, such as those that reduce vulnerability, are advocated. ERLs are not intended to address long-term economic problems that require major policy adjustments. They are also not intended for projects addressing broad sectoral, structural, or institutional goals. ERLs, as a disaster response instrument, are designed for rarer disasters, rather than recurrent or longer-term events such as flooding and drought (which are better managed through the use of more traditional development loan programs). ERLS must make every effort to incorporate policy and action that result in an overall reduction in vulnerability from the hazard encountered. Bank policy calls for detailed study, planning, and preparation in advance of and during the implementation of funded projects to ensure overall risk is reduced.

Retroactive Financing

World Bank policy normally restricts financing for payments made by borrowers for a project before the date of a loan agreement. However, the disaster policies allow up to 20% of loans to retroactively pay for emergency recovery operation expenditures, as long as they occurred after the disaster and within 4 months before the expected date of loan signing. And, in extraordinary circumstances, exceptions to the 20% limit may be granted.

Loan Reallocations

When a government requests post-disaster assistance, the World Bank country staff begins by examining the existing country portfolio to identify loans for which reallocation for reconstruction is possible. Because not all emergency situations demand ERLs, the Bank had often used the reallocation of existing loans to quickly provide smaller amounts of funding as appropriate, or to supplement ERLs in larger disasters. Reallocation worked so quickly because the source projects are already approved; therefore, funds could be very quickly rededicated to disaster-specific needs (often within the broad sector into which they were originally dedicated). Reallocations are most appropriate in situations where the relevance of the original project has been reduced or eliminated by the disaster. From 1984 to 2005, the Bank reallocated funds from 217 projects totaling almost \$3.05 billion in order to make them available for disaster response through loan reallocation. In recent years, however, the Bank has moved away from reallocation in favor of risk pools and contingent credit lines ([World Bank, 2012](#)).

Redesign of Projects Not Yet Approved

Another way to make funds available to a disaster-affected government is to redesign projects that have not yet been approved. In doing so, newly acquired data about the country's disaster profile, and thus their vulnerability reduction needs, can be incorporated, as can new project components that contribute to post-disaster reconstruction that were not part of the original project design.

Balance of Payment Support

Balance of payment support is designed to provide quick disbursement of funds to meet the most pressing financial needs of affected countries. Designed to provide quick inputs to stabilize macroeconomic conditions and facilitate recovery following a calamity, this kind of support is not very common. In fact, very few loans have been made by the World Bank for balance of payment support following natural disasters.

Free-Standing Investment Projects for Mitigation

After a disaster occurs, when new hazard risk information is acquired through assessment and study, disaster mitigation projects can be designed in a way that more effectively limits risk. In this context, the World Bank offers another lending instrument—the free-standing mitigation project loan—that nations may use to reduce their long-term risk. Though mitigation and risk analysis are

considered essential components of regular loan programs, free-standing mitigation loans designed specifically to help prevent foreseeable disasters from occurring and/or limiting their destructive impact allow for a more targeted outcome. (Related video: World Bank President Joins Japan in Calling For Increased Disaster Risk Management. <http://bit.ly/25Crz6O>.)

World Bank Coordination Assistance

The World Bank is one of a large number of institutions that governments can call upon to offer coordination assistance following a disaster. Bank policy states that it is within both the ability and interest of the Bank to assist disaster-affected borrowers in the coordination of overall donor efforts, especially as they relate to the gathering of damage-assessment information. The policy requires that following a disaster, the Bank should facilitate collaboration between the government, the Bank, multilateral and bilateral donors, and NGOs to develop a common recovery strategy. Coordination can help to ensure that prevention and mitigation activities are incorporated in all reconstruction projects, Bank-funded or otherwise, and that neither duplication nor omission of coverage occurs.

The Bank has and continues to work with other donors in post-disaster situations on several different levels: co-financing Bank-supported projects, co-financing others' projects, donors working on related projects of their own, or by performing joint damage assessments. At present, the Bank fulfills this coordination role through partnership with the UNDP and other international agencies, bilateral donors, and local nongovernmental organizations as appropriate and possible.

The Bank's coordination role in the immediate aftermath of disasters has been somewhat limited. However, it has maintained a more prominent role in longer-term reconstruction efforts. The Bank typically concentrates on infrastructure and housing during the reconstruction, given its comparative advantage in that area. The Bank has considerable experience with disaster recovery, and plays an important role in assisting with coordination that ensures that the country's needs are met with as few overlaps and conflicts of priorities as possible.

World Bank Technical Assistance

The World Bank assists countries managing their disaster risk, and those facing actual disasters, through a suite of technical assistance. The assistance is grouped into the following areas:

- *Analytical Work:* The Bank spends considerable effort advancing the study of and knowledge about disaster and their management through the generation of publications, working papers, articles, and reports on various disaster topics. These publications explore a wide range of topics that have included risk management and financing mechanisms.
- *Country Engagement:* The World Bank recently replaced its long-standing

Country Assistance Strategy (CAS) with a new Country Partnership Framework (CPF) program. The CPF is described as being a systematic, evidence-based, selective program that is focused on the goals of “ending extreme poverty and increasing shared prosperity in a sustainable manner” ([World Bank, 2016b](#)). As a part of the program, World Bank staff create a Systematic Country Diagnostic (SCD) which is used to inform the efforts of the country partnership by providing assistance reference points. The SCD identifies the most important challenges and opportunities that will be encountered in tackling the country’s development goals. The CPF process includes the following four steps:

1. Identify the constraints to poverty reduction, and mechanisms for increasing prosperity in an equitable and sustainable way.
2. Determine what World Bank contributions or interventions are most critical.
3. Assess midcourse progress of the Partnership.
4. Identify and capture end-of-cycle lessons in order to improve the SCD process.

More detail about the Country Partnership Framework is provided in the document found at: <http://bit.ly/1XmEiWV>. Specific provisions of the SCD can be found by accessing the World Bank document “Interim Guidelines for Systematic Country Diagnosis” at: <http://bit.ly/1P8M0v5>.

- *The Disaster Risk Management Team:* In 1999, in response to an increase in disaster-related lending, the Disaster Management Facility was established, which later became the Hazard Management Unit (HMU). This office provided World Bank task managers with disaster-specific technical assistance, thereby allowing them to provide a more strategic and rapid response. In 2005, this unit was drastically modified to reflect a decentralized structure, and given the new title of Hazard Risk Management Team (within the Social, Urban, Rural, and Resilience Global Practice Unit), later changed to the Disaster Risk Management Team. The Disaster Risk Management Team, which is considered the anchor for the much larger Hazard Risk Management Thematic Group (which consists of more than 100 Bank staff in the various organizational units with a particular interest in hazard risk management), works to facilitate greater adherence to prevention and mitigation objectives in Bank-funded development projects. The Disaster Risk Management team provides technical support to Bank operations in promoting capacity building and establishing partnerships with the international and scientific community working on disaster issues. The Global Facility for Disaster Reduction and Recovery, described above, is a part of this team.
- *Disaster Damage, Loss, and Needs Assessment Assistance:* Accurate assessment of damages, losses, and needs are critical to the type of work that the World Bank conducts in the post-disaster setting, and for formulating the loans and other assistance provided. With increasing frequency, the Bank has helped borrowers to assess disaster damages and to develop a recovery strategy. The Bank developed the Damage and Loss Assessment (DaLA) methodology in

1972, and has spent considerable efforts in updating and improving it since. The DaLA bases the assessment on economic factors, which is appropriate given the Bank's mission. It also uses national accounts and statistics of the country government as baseline data to assess damage and loss, and incorporates the impact of disasters on individual livelihoods and incomes to fully define the needs for recovery and reconstruction. An example of a DaLA report produced in the aftermath of the 2006 Yogyakarta Earthquake can be found at: <http://bit.ly/1srexHz>. Another assessment methodology that is used by the Bank, in conjunction with UNDP, is the Post-Disaster Needs Assessment (PDNA). PDNAs are performed in partnership with the affected country's government by the Standby Recovery Financing Facility (SRFF), which is a Bank-sponsored global disaster recovery fund. The PDNA reports are used by governments and the international development community to create recovery and reconstruction plans, and are used by bilateral partners (namely international development agencies) in determining the type and scope of assistance to offer. An example of a PDNA report, prepared in the aftermath of the Nepal Earthquake (2015), can be found at: <http://bit.ly/1TYS7Xa>.

- *Emergency Preparedness and Disaster Risk Management Studies and Surveys:* Disaster projects often have a research or survey component related to the achievement of key project objectives. These studies are typically used to increase the disaster resilience of the project's goals or outcomes. Because so many projects either have experienced or are expected to face repeat or new disasters in the future, disaster studies are necessary for proper hazard risk consideration to be incorporated. An example of a regional disaster risk management study can be accessed at: <http://bit.ly/1UyMOhi>.
- *Institutional Development/Capacity Building:* Through its disaster-related projects, the World Bank has worked in member countries to strengthen hazard management institutions, and to stress the importance of strengthening countries' institutional capacity for long-term disaster prevention and mitigation—both on its own and in cooperation with other agencies. Over the past 20 years, the Bank has formulated institutional development assistance through hundreds of efforts that have included project management, disaster management, general research, early warning improvements, disaster-specific training programs, engineering studies, and legal and policy reform.

The International Monetary Fund

The International Monetary Fund (IMF) was established in 1946 and has grown to a current membership of 189 countries. Its goals are to promote international monetary cooperation, exchange stability, and orderly exchange arrangements; to foster economic growth and high levels of employment; and to provide temporary financial assistance to countries to help ease balance of payments adjustment. It carries out these functions using loans, monitoring, and technical assistance.

In the event of an international disaster or CHE in a member country, the IMF utilizes its Rapid Financing Instrument (RFI) to provide rapid financial assistance. In these situations, it is not uncommon for a country to have severely exhausted its monetary reserves. The primary purpose of the RFI is to address urgent balance of payments needs that disaster-impacted governments may be facing. It provides rapid and low-access financial assistance without the need for a full-fledged IMF financial program in place, and is able to meet other urgent needs from factors like disasters, conflict, or commodity price shocks. The RFI recently replaced existing emergency assistance policies in order to increase the IMF's flexibility in assisting its member that were affected by an emergency or disaster. This included the Emergency Natural Disaster Assistance (ENDA) and Emergency Post-Conflict Assistance (EPCA) policies. The RFI is similar to another IMF program called the Rapid Credit Facility (RCF), which provides rapid financial assistance to low-income countries, and as such low-income countries often use the RCF rather than the RFI in disaster situations. Access under the RFI is limited to an amount that equals 37.5% of the nation's lending quota per year, and 75% of its quota on a cumulative basis. The level of access in individual cases depends on the country's balance of payments need. Financial assistance is supposed to be repaid within 3½ to 5 years, and borrowers must cooperate with the IMF to make efforts to solve its balance of payment difficulties and to describe the general economic policies that it proposes to follow.

The IMF's goals are to rebuild government capacity and to return stability to the local economy. In the event of a natural disaster, funding is directed toward local recovery efforts and for any economic adjustment that may be needed. If the situation is a post-conflict one, its aim is to "re-establish macroeconomic stability and the basis for long-term sustainable growth" ([Ames et al., 2001](#)). The IMF will lend assistance only if a stable governing body is in place that has the capacity for planning and policy implementation and can ensure the safety of IMF resources. After stability has been sufficiently restored, increased financial assistance is offered, which will be used to develop the country in its post-emergency status.

When a country wishes to request emergency assistance, it must submit a detailed plan for economic reconstruction and ensure that it will not create trade restrictions or intensify exchange. If the country is already working under an IMF loan, then assistance can come in the form of a reorganization within existing arrangements. Separate emergency assistance loans as described above are also considered at this point.

A country often requires technical assistance or policy advice because it is in a situation for which it has no experience or expertise. This is common in post-conflict situations where a new government has been established and partnerships are being created for the first time. The IMF offers assistance in building capacity to implement macroeconomic policy. This can include tax and government expenditure capacity, the reorganization of fiscal, monetary, and exchange institutions, and guidance in the use of aid resources.

Critical Thinking

Should the IFIs be concerned with disaster management, or do you think that they should let UNOCHA and the other UN agencies handle all disaster-related concerns? Explain your answer.

What is the risk of allowing a disaster-affected country to reprogram a regular development loan, such as one that covers the construction of a new hospital, to be used for disaster relief? Under what circumstances does this practice make sense, and in what cases should it be avoided?

Case Study: The Haiti Earthquake, January 12, 2010

On January 12, 2010, the island of Hispaniola was struck by a major earthquake measuring 7.0 on the Richter scale. The tremor, which was centered near the town of Leogane and only 16 miles from Haiti's capital, Port-au-Prince, occurred at 4:53 pm and at a depth of 8.1 miles. The primary quake was followed by 52 aftershocks measuring at least 4.5 on the Richter scale.

Virtually all of Haiti's 3 million people, who were woefully unprepared for such an event, were affected by the quake. Though the exact numbers will never be known, reliable estimates place the final death toll at more than 220,000 people, and over 300,000 people were injured. Additionally, approximately 2 million people were made homeless by the quake, which destroyed over 250,000 residences and over 30,000 commercial buildings, causing a massive problem with internally displaced people (IDPs) (Fig. 8.4). The event also resulted in total destruction of existing public health and medical infrastructure; damage to roads, bridges, and other transportation infrastructure; and other problems, forcing the already heavily-indebted country to endure a likely 3 decades of recovery (Blanchfield, 2012). The Presidential Palace and National Assembly building were both destroyed, as was the country's primary jail, the city's cathedral, over 4000 schools, and more than half of government and administrative buildings (Disasters Emergency Committee, n.d.).



EARTHQUAKE-AFFECTED AREAS AND POPULATION MOVEMENT IN HAITI

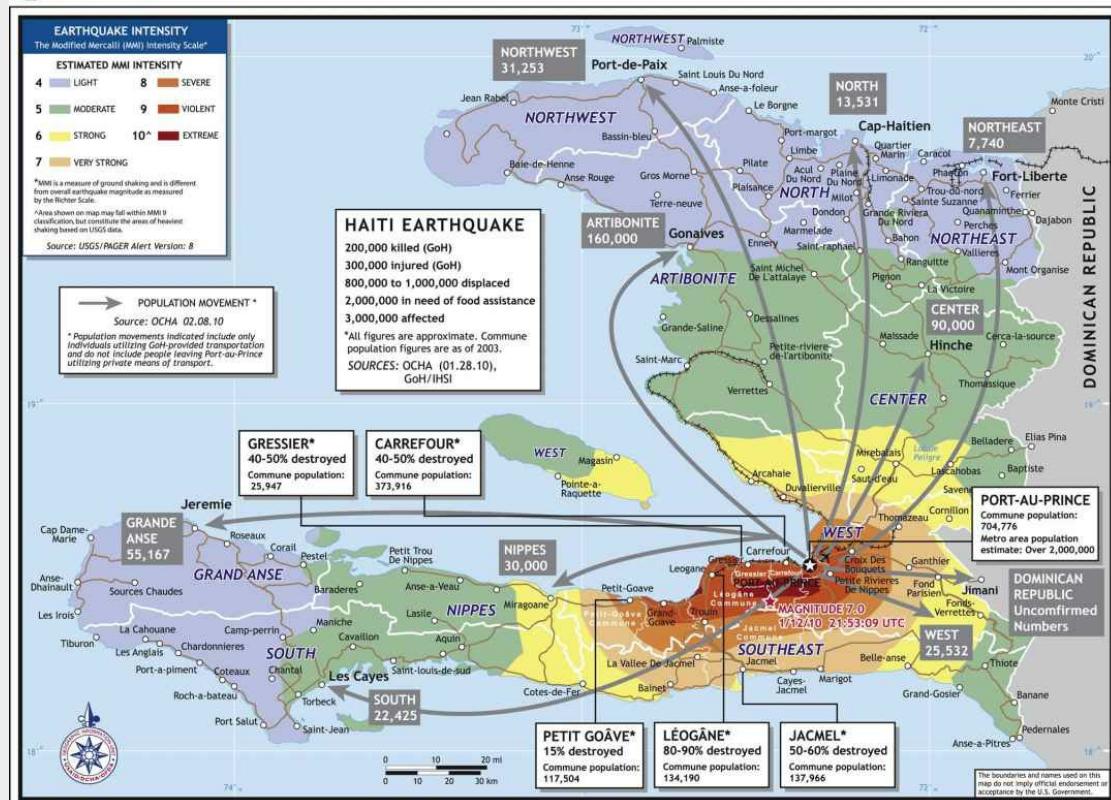


FIGURE 8.4 Map of earthquake intensity and population movement in Haiti, 2010. USAID (2010).

Haiti's government and people were not completely unaware of the earthquake risk that existed, having suffered multiple major quakes in their country's history (many of which caused mass death and destruction). But because of decades of poor governance and very low development indicators, almost nothing was done to minimize risk or to prepare the population. As such, the country was immediately overwhelmed by the event, and appeals for international aid were made as soon as word could get out. Despite these calls, the country's infrastructure was so heavily damaged (including the total loss of the nation's largest port) that the delivery of foreign aid was hampered for days. Additionally, destruction of the UN offices, from where an international coordination effort would take place, and a lack of communication from the nation's top leaders, caused significant confusion about who was in charge and what damages had been sustained.

The impacts of the disaster resulted in major displacements of the population, including 2.1 million people at its peak (of which 302,000 were children). Of these, 1.5 million moved into mass care camps that put the residing population at risk from a number of other hazards including flooding, mudslides, insecurity, and cholera (which has already resulted in over 650,000 infections and over 8000 deaths (CDC, 2013)).

Eventually the deliveries of international assistance began to arrive, and the UN "cluster system" of coordination was put into place to address the complex lifesaving and sustaining needs of Haiti's population. Twelve clusters, which

are similar to ESFs, were activated:

1. Logistics
2. Camp Coordination and Camp Management (CCCM)
3. Shelter
4. Nonfood items (NFI)
5. Food
6. Health
7. WASH (water, sanitation, and healthcare)
8. Education
9. Protection
10. Early recovery
11. Agriculture
12. Emergency telecommunications

The \$7.9 billion in assessed damages and losses caused by the 2010 earthquake in Haiti represented 120% of Haiti's \$6.7 billion GDP. As such, recovery has required significant investment (in the form of bilateral aid and loans from the international financial institutions), technical assistance, and materials. It is estimated that foreign donors provided \$1.6 billion for relief and \$2 billion in recovery assistance. The ongoing recovery effort represents something of a test bed of modern recovery lessons learned, since reconstruction will be nearly total in the impacted areas and is closer to development in many regards. If the recovery leaders and stakeholders are able to effectively drive the recovery efforts in a manner such that corruption is kept to a minimum, efforts are not duplicated and there are no holes in the coverage; and recovery stakeholders are able to work in a holistic, synergistic manner, it is likely that the nation will be more resilient, more developed, and better able to recover from such events in the future.

On January 13, 2010, US Ambassador to Haiti Kenneth H. Merten declared the earthquake situation in Haiti a disaster, which enabled bilateral support by the US government. USAID/OFDA had deployed a Disaster Assistance Response Team (DART) to provide humanitarian assistance and coordinate the USG response in the disaster's earliest days, and at its height the DART comprised 545 individuals (511 urban search and rescue team members and 34 USAID/OFDA staff members). Following initial life-saving efforts, USAID/OFDA supported a neighborhood-based approach to facilitate returns to areas of origin and help re-establish pre-earthquake social and economic structures. As part of this approach, USAID/OFDA provided shelter support—including transitional shelters, repairs to damaged houses, and host-family support—to approximately 328,000 people.

In the years that followed these initial relief operations, the US Government continued to support the long-term recovery in Haiti through USAID. In that time, USAID performed the following (by sector):

Infrastructure

- Partnered with the international community to provide basic emergency shelter assistance to 1.5 million people.

- Provided interim and transitional shelter solutions, conducted repairs on damaged houses, and supported host-families housing people displaced after the earthquake, which benefitted more than 320,000 people.
- Collected, recorded, and validated land tenure and occupancy status of more than 8800 plots/buildings.
- Removed 2.7 million cubic meters of rubble of the approximately 7.4 million cubic meters of rubble that had been created by the earthquake.
- Constructed more than 900 new homes.

Energy

- Constructed a 10 MW power facility to provide electricity to the new Caracol Industrial Park and 7000 local homes and businesses.
- Rehabilitated and upgraded five electrical substations in Port-au-Prince.
- Converted cookstoves for 61,000 businesses and households from charcoal to clean liquefied natural gas.

Economic Security

- Supported the creation of the Haiti Apparel Center (HAC), which trained more than 1900 machine operators, mechanics, and inspectors, 41% of whom were women.
- Extended approximately \$57 million in loan guarantees to the banking system to facilitate easier access to credit for small and medium-sized businesses (SMEs).
- Provided more than 54,000 agricultural loans to farmers for coffee, mango, and cocoa production, allowing farmers to improve crop production and access markets directly.
- Leveraged private capital from financial institutions for the disbursement of 560 loans valued at \$5.1 million since the earthquake in key areas of post-earthquake recovery, including agriculture and construction.
- Partnered with the Bill & Melinda Gates Foundation to launch the first mobile money campaign in Haiti, which allows Haitians to conduct person-to-person transactions with their cell phones.

Food Security

- Increased agricultural-related income of beneficiary rural households by 76% by rehabilitating irrigation systems, rural roads and supporting storage and processing facilities.
- Introduced improved seeds, fertilizer, and technologies to more than 70,000 farmers; these have increased rice yields by 64%, corn yields by 338%, bean crops by 97%, and plantain outputs by 21% for beneficiary farmers.
- Trained more than 30,000 people in natural resource management, including soil conservation, tree nurseries, and hillside production.
- Graduated more than 700 people from a master farmers program, approximately 25% of whom were women.
- Increased income of 5000 cacao growers by a minimum of 25% through partnerships with private sector entities to train farmers in cocoa production.

- Provided mobile collection centers, sorting tables, and 6000 plastic crates for mango harvesting, increasing mango sales by three farmer associations to exporters by more than 65%.
- Increased economic benefits derived from sustainable natural resource management and conservation, benefitting nearly 150,000 people through ravine treatment, hillside rehabilitation, and improved technologies that have improved the quality of crop output.
- Initiated watershed management improvement covering approximately 33,000 hectares, and planted five million seedlings.
- Fed 400,000 Haitians rendered vulnerable due to tropical storms and drought conditions in 2013.
- Launched innovative “e-vouchers” in some of Haiti’s poorest areas to improve access to locally produced food through this electronic food voucher safety net.

Health

- Continued to support 251 sites that provide primary care and 52 that provide secondary care nationwide, to nearly 50% of the Haitian population.
- Provided HIV counseling and testing services for nearly 170,000 pregnant women. Through the Presidents Emergency Plan for AIDS Relief (PEPFAR), HIV/AIDS indicators have dramatically improved over the last decade. In 2014 alone, 900,000 Haitians were tested for HIV and more than 62,000 received treatment.
- Identified and treated more than 2900 people with symptomatic tuberculosis. Immunization programs vaccinated nearly 157,000 children under age of 1 in 2011 for routine childhood diseases. Also provided more than 350,000 antenatal care visits and more than 131,000 postpartum/newborn care visits.
- Approximately \$1 billion is being invested over 5 years (2011–16) by the United States on essential healthcare services in Haiti.
- The US-supported national measles, rubella, and polio immunization campaign has reached over 90% coverage.
- Supported the reconstruction of Haiti’s University Hospital and other damaged health facilities.
- US support for cholera treatment and prevention as well as assistance for clean water and sanitation is helping to dramatically lower the number of new cholera cases; in November 2014 the Haitian Ministry of Health reported cholera incidence rates down 97% since 2011.
- US support is advancing efforts to eliminate malaria and lymphatic filariasis from Haiti.
- Funded St. Boniface Spinal Cord Injury Center to help 24 spinal cord injury patients, 12 of whom have been successfully discharged back to their communities.

Education

- Constructed more than 600 semi-permanent furnished classrooms, enabling more than 60,000 children to return to school following the earthquake.

- Provided teaching and learning kits to accommodate a double shift of students in each classroom, reaching approximately 60,000 students and 1200 teachers.
- Increased physical access in 17 primary schools for people with disabilities and provision of inclusive education training to 150 teachers and school principals.
- Trained 935 teachers on pedagogy and student evaluation.
- Trained 145 administrators and other Ministry of Education officials on administration, information system management, and training of trainers.
- Completed vocational training for youth, with 13,000 successfully transitioning to formal school, further vocational training, or other opportunities.

Governance and Rule of Law

- Supported the training of 3300 new Haitian National Police (HNP) officers in support of the Government of Haiti's goal to reach 15,000 officers by the end of 2016.
- Deployed 110 United Nations Police (UNPOL) to advise and mentor the Haiti National Police (HNP)
- With the New York City Police Department, provided training to a new HNP community policing unit, which doubled in size to 80 officers and operates in several Port-au-Prince neighborhoods.
- In partnership with the Miami-Dade Police Department, trained and equipped the HNP counter-narcotics unit (BLTS), growing it from about 40 to 197 officers and adding a 20-dog K-9 unit.
- Helped HNP to improve administrative, logistics, management, and oversight capabilities.
- Completed construction of six police stations and the presidential security unit barracks.
- Deployed an electronic financial management system that 35 government offices are using to enhance accountability and transparency of revenue and expenditure.
- Provided technical assistance to process 4000 cases of prolonged pre-trial detention, including the release of some 1000 detainees who had already served their sentences.
- Provided expertise and training to Parliament to draft, debate, and pass priority legislation on anti-money laundering, international adoption procedures, and anti-trafficking in persons.
- Established Haiti's first electronic judicial case management information system in Saint-Marc that allows the judiciary to track cases from arrival in the prosecutor's office to court adjudication.
- Helped reconstruct more than 30,000 case files damaged or destroyed in the earthquake.
- Began construction of three correctional facilities to help alleviate overcrowding and improve conditions in Haiti's prisons.
- Raised awareness of and helped reduce gender-based violence (GBV) by

providing cross training to police and justice officials and strengthening capacity and referral networks of civil society partners providing GBV prevention and response services. Supported anti-GBV public messaging and referral services to victims for testing and counseling.

Source: USAID. 2015. US Government Assistance to Haiti: 2010 to 2015: Earthquake.

<http://bit.ly/1srh2cU>; US Department of State. 2011. Shelter: Two Year Fast Facts on the US Government's Work in Haiti. Office of the Haiti Special Coordinator. <http://1.usa.gov/1r4HIPe>.

Conclusion

As global populations converge into more concentrated urban settlements, their collective hazard risks amplify. Loss of life and property caused by the realization of these hazard risks will overwhelm the response and recovery capacities of individual sovereign nations to an ever-increasing degree. Many of these disasters, particularly in the lesser-developed nations, will contribute to existing development obstacles and regional instability unless trends toward increased multilateral cooperation in disaster assistance are recognized more widely for their importance. The capabilities and organizational capacities of the international disaster management agencies listed in this chapter, namely national governments, nonprofit organizations, international organizations, and the international financial institutions, are vital for both the preparation and mitigation of hazard risks, and the response and recovery of actualized disasters.

Important Terms

Complex humanitarian emergency

Coordinating organization

Developing nation

Donor agency

International financial institution

International organization

Nongovernmental organization

Private voluntary organization

Sovereignty

Self-Check Questions

1. What percentage of all disaster-related injuries and deaths are sustained in countries with per capita income levels below \$760 per year?
2. Why do poor nations often place disaster management so low in terms of budgetary priority?
3. When does a disaster require international involvement?
4. How are complex humanitarian emergencies different from those caused by natural or technological disasters?
5. What are the four important issues influencing the response process that are listed in this chapter? Describe each.
6. What was the goal of the International Decade for Natural Disaster Reduction?
7. Why were the Hyogo Framework for Action and the Sendai Framework for Disaster Risk Reduction developed?
8. How does the United Nations Development Programme contribute to international disaster management?
9. What is the purpose of the UNDP-led Global Partnership for Preparedness?
10. What are the three main groupings of disaster response performed by UNOCHA?
11. How does UNOCHA help nations mitigate and prepare for disasters?
12. Name the various classifications of nongovernmental organizations, and describe each.
13. What are the four common characteristics shared by the NGOs?
14. How does the US government provide assistance to disaster-affected nations?
15. Name one international financial institution and describe how it assists in the aftermath of an international disaster.

Out-of-Class Exercises

1. Visit the UN Humanitarian Program Cycle (HPC) website at <http://bit.ly/1TYZ0aV>. Navigate through the page's hyperlinks. Look through the different appeals, and determine what percentage of the appeal has been funded. From this list, try to determine why some countries' appeals are fully funded, while others fall very far short of their request. Is this an issue of inequality in relief distribution, or is it something else?
2. Visit the Interaction website at www.interaction.org. Select a member organization from their member list, and go to that organization's website. Investigate what that organization does in response to disasters. In what countries around the world is that organization working right now? If a disaster happened in the United States, would that organization respond? Why or why not?

Emergency Management and the Terrorist Threat

Abstracts

On 9/11, 2001, the United States was hit by a terrorist attack that was so spectacular in its methods, and so devastating in terms of the loss of life and the destruction of property, that every citizen—no matter where they were at the time—felt its impacts. And for most people, this singular, yet devastating event, came to mark what—even in its earliest stages—appeared to be a major turning point in the nation’s experience with terrorism. In the days, the months, and now the years that have followed, the country has witnessed the creation of entirely new government agencies that are massive in size and scale, and an expansion of functions across the federal, state, and local government levels as well—all of which are focused on preventing a similar attack from happening.

Keywords

Adjutant general; after-action report; critical infrastructure; National Terrorism Advisory System (NTAS) and Homeland Security Presidential Directive (HSPD)

WHAT YOU WILL LEARN

- How the rising threat of terrorism has impacted emergency and risk management in all sectors
- What domestic and international terrorist events have impacted the United States
- Why the 9/11 Commission was formed and what was found as a result of its investigation
- The formation of the US Department of Homeland Security and its various components, functions, and accomplishments
- How the federal government funds the counterterrorism efforts of first responders
- How the US government communicates terrorist threat information to the public
- How state and local governments manage the risk of terrorism
- How Hurricane Katrina affected terrorism preparedness and response

Introduction

On 9/11, 2001, the United States was hit by a terrorist attack that was so spectacular in its methods, and so devastating in terms of the loss of life and destruction of property, that every citizen, no matter where they were at the time, felt its impacts. And for most people, this singular, yet devastating event, came to mark something that even in its earliest stages was to be a major turning point in the nation's experience with terrorism. In the days, the months, and now the years that have followed, the country has witnessed the creation of entirely new government agencies that are massive in size and scale, as well as an expansion of security-related functions across departments and agencies at the federal, state, and local government levels—all of which are focused on preventing similar attacks from happening again.

For the US Congress and for the executive branch, policies and laws were launched in the wake of the 9/11 attacks at an almost alarming rate—almost all heavily influenced by the pressing need to address a seemingly new hazard. This initial wave of changes, and the constant ebb and flow in security legislation that has persisted ever since, have had a resounding impact not only on emergency management, but also on the nation's foreign policy, immigration policies and enforcement practices, counter-narcotics programs and policies, the protection of the transportation network, and even the nature of international trade agreements. Keeping track of it all presents a formidable challenge even for those engrossed in security-related professions.

Funding for national security focused on terrorism prevention and response has totaled well into the billions of dollars each year since 2001, and much of this has assisted the emergency management community in developing an appropriate level of capacity. An expansive suite of federal grant programs was created to formalize the assistance, specifically in terms of helping state, tribal, territorial, and local governments counteract the singular terrorism hazard that has largely dominated the public and policy agendas since the turn of the century.

To fully comprehend how 9/11 altered the emergency management landscape, one must appreciate how local level responders including medical, law enforcement, and fire department staff, emergency managers, and local elected officials each faced a sudden and unexpected rush to understand:

- How this new hazard impacted their communities
- How vulnerable their communities and each of the different stakeholders were to the hazard
- What needed to and likewise could be done to prepare for, to prevent, to respond to, and to recover from a terrorist attack

In this manner, every American community continues to examine itself in a new perspective of security awareness. Towns and cities must achieve a balance between preserving the settings and practices that characterize traditional American life, and hardening traditionally soft targets through structural and systems engineering methods that enable detection and deterrence of attacks.

Communities grapple with the magnitude of the threat situation as schools, businesses, recreation, sport, social functions, government and infrastructure have each been targeted by terrorist elements. Most communities felt that the sum of these threats, when measured against any capacity to prepare for, prevent, respond to, or recover from, represented a problem few could reasonably be expected to adequately manage on their own.

In reality, the nation and its many communities have contended with terrorism and terrorist elements for centuries. Since America was founded almost 250 years ago, there have been thousands of legitimate terrorist threats in thousands of villages, towns, and cities. Of these, hundreds have resulted in actual terrorist attacks involving bombs, shootings, chemical and biological attacks, physical assaults, and much more. Courthouses, research facilities, restaurants, family planning clinics, energy exploration facilities—even auto dealerships—have all been targeted. And while in the vast majority of these events the outcome was relatively minor, a number resulted in deaths, injuries, and destruction on a scale that overwhelmed typical response mechanisms—even if not to the levels witnessed on 9/11. In many ways the destruction of the World Trade Center towers and the damaging of the Pentagon was the last straw in a long line of incidents that highlighted the threat potential rather than the first event heralding a new threat category.

As a class of hazards, terrorism is actually broad in scope. While the media tend to focus on events perpetrated or inspired by foreign terrorist elements, the majority of events are carried out by individuals and organizations that vary greatly in their origin, size, and purpose. Terrorists may or may not have a tangible ideological or philosophical reason for carrying out their attacks, and they may be “home-grown” or internationally based. They may be individuals acting alone, or members of organized groups running concerted terror campaigns.

Terrorists also have a wide range of weapons and tactics to choose from. These include more traditional methods such as shootings, bombings, and assault-type attacks, as well as more devastating methods involving weapons of mass destruction such as chemical, biological, or radiological weapons (described in [Chapter 2](#), Natural and Technological Hazards and Risk Assessment). And with the connectivity of financial, infrastructure, communications, and other systems through the Internet, terrorists can cause devastating impacts without even venturing close to their targets by utilizing cyberterrorism.

For the emergency manager, terrorism is just one of many hazards that merit their attention, and likewise their resources. But the terrorism hazard is unique in regards to what the threat means to the emergency manager and how it is handled both prior to an attack and after one occurs.

Like natural and technological hazards, there are many actions that can be taken to protect the community from terrorist attacks. In each community, there is a specific hazard risk associated with terrorism represented in its likelihood of happening and the expected set of consequences that could result if an attack took place. With that information in hand, the emergency manager must look

at:

- What preparedness actions the community needs to take to ensure they have the knowledge, staff, equipment, procedures, laws, and other capabilities in order to address the consequences of a very wide range of possible attack types
- What the community can do to mitigate, or in other words, to prevent a terrorist attack from happening, or to make an attack less likely to cause damages, injuries, or fatalities
- How the community should respond to actual attacks, and who is responsible for the different actions that must take place to address all of the response needs that arise
- What is going to be needed in the longer-term period of recovery after an attack has taken place, relative to rehabilitating the injured, addressing the psychological impacts that have been sustained, rebuilding damaged property including any decontamination that might be needed, and addressing any vulnerabilities that might have existed to allow the attack to happen in the first place

Terrorism differs from natural and technological disasters in a number of ways, and many emergency managers have had to change their existing plans and procedures, expand their inventories, and provide additional training to address these changes.

- *Intent*—Terrorist hazards are called “intentional hazards” because their perpetrators make every effort to ensure that they are as devastating as possible. Unlike other sources of hazard, terrorists strive to evade detection, to strike without warning, to focus on changing vulnerabilities, and to do whatever it takes to cause the greatest impact.
- *Criminality*—The criminal nature of a terrorist attack adds a new dimension to the management of terrorist events in that there are additional stakeholders involved. These include the intelligence community, whose members identify and track terrorists; the security community, whose members work to deter terrorists or stop their attacks; and the law enforcement and investigations communities, whose members identify those responsible for the attack and to bring them to justice.
- *Laws guiding terrorism prevention and response*—Despite that all hazards present a risk to national security, lawmakers often make special concession for the terrorist threat in large part due to its intent and the emotional aspects that accompany that factor. Terrorism therefore has its own authorities, its own requirements of the emergency management communities, and differences in the command, control, and coordination structures that are employed.

There are of course many other differences, such as the methods of cleanup and decontamination required when weapons of mass destruction are used, the recognition and notification systems that are required for chemical and biological attacks, the impacts related to mere threats of an event, and more. Many parallels could easily be equated to other hazard types in these regards. For instance, whether a railcar containing the toxic gas phosgene is breached in a legitimate accident or a deliberate attack, there will be a need to contain the

leak, protect those in the immediate area, and treat those who have been affected. Regardless of the cause of the event, without the right knowledge about what must be done and how to do it, and the right protective gear and procedures that are put in place, managing terrorism will be all but impossible even for those communities that are otherwise highly prepared for every other form of disaster.

Changes in Emergency Management and the War on Terrorism

Emergency management is a risk-based discipline, and the dedication of funding, equipment, staff efforts, and other factors should be made according to the outcome of scientific risk analysis as described in previous chapters of this book. However, emergency management policy and strategy is, to an increasing degree, dictated by the policy agenda of government administrations, which are more closely aligned to public opinion than any scientific assessment. It is therefore incumbent upon emergency managers to apply a level of attention to preparing for the next bombing or biochemical event that may be disproportionate to that of preparing for the next hurricane or flood or tornado, as such decisions are dictated by grant requirements, regulations, and other legal and statutory provisions.

The focus of emergency management in the war on terrorism can have many crossover benefits into natural and technological hazards management, as many of the actions taken bring about a net reduction in risk for our first responders, the public, the business community, the economy, and our way of life. Initiatives such as interoperable communications, credentialing, standardization of incident management protocols, and others that were created in the aftermath of 9/11 to manage the terrorist threat all have extensive dual-use applications at all government levels.

The war on terrorism brought about the most fundamental change in nationwide emergency management capacity since the creation of FEMA due to the unprecedented funding resources that have been made available to the state and local emergency management communities, even if those funds are beginning to disappear on account of ongoing budget problems. The federal government recognized the vital role that state and local first responders played in responding to the 9/11 events, but it also recognized that most agencies do not have the capacity to handle the growing terrorist threat. The vast sums of money that have been provided by the federal government to first responders have been used for the purchase of equipment and training, to conduct planning and exercises, and for the development of new technologies. Funding for FEMA remains at increased levels, as does the amount of funds FEMA delivers to state and local emergency management organizations, especially when compared to pre-9/11 figures. Prior to 2001, FEMA distributed approximately \$175 million annually to its state and local emergency management partners. Since the 9/11 attacks, the amount of money granted to these agencies has been tallied in the billions of dollars each year. New federal funding sources for emergency managers have also opened up in the Department of Defense, the Department of Justice, and the Department of Health and Human Resources, to fund contingency plans, technology assessment and development, and bioterror equipment and training. These changes in funding for emergency management are felt most profoundly at the

state and local levels.

The creation of the Department of Homeland Security (DHS) represented a landmark change for the federal community, especially for emergency management. The consolidation of all federal agencies involved in fighting the war on terrorism follows the same logic that first established FEMA in 1979. At that time, then-President Carter, at the request of the nation's governors, consolidated all the federal agencies and programs involved in disaster relief, preparedness, and mitigation into one single federal entity, FEMA. And this new agency had a director that reported directly to the president. FEMA continued to serve as a Cabinet-level agency until 2002, when it became a component of the new DHS, thereby separating the FEMA director from the president by an additional organizational reporting layer. The implications of this change were not fully appreciated until the chaotic Hurricane Katrina response exposed significant misalignment between the DHS and FEMA missions. Moreover, FEMA's role as the voice of emergency management had been degraded, and the consequences were devastating.

Following the 2005 hurricane season, Congress addressed many of these leadership and capacity shortfalls through passage of the Post-Katrina Emergency Management Reform Act of 2006 (PKEMRA). This legislation again reorganized federal emergency management structures in a way that more clearly positioned FEMA as a nation's leader on emergency management issues rather than limiting it within the national security domain. These changes continue to evolve as each new terrorist attack and subsequent natural disaster pulls the pendulum from side to side. In any case, the endurance of the current organizational structure of DHS indicates that it is highly unlikely FEMA will again be independent from the terror- and security-focused DHS in the near future.

The Terrorist Threat

Terrorism is a global problem. From 1969 to 2014, over 142,000 terrorist attacks were reported worldwide. Of these, 2646, or less than 2%, occurred in the United States, leading to the deaths almost 3521 people and injuries to about 3000 more (see [Table 9.1](#)). When Americans citizens and interests (e.g., businesses) overseas are included in this count, the number killed more than doubles and the number injured increases by a factor greater than five (more than 16,000 people) ([University of Maryland, 2016](#)). The economic damage caused by these events is not as easily calculated, but reaches into the billions of dollars in direct impacts and indirectly into the trillions of dollars.

Table 9.1
Ten Most Deadly Terrorist Attacks in the United States*

Date	Location	Killed	Injured	Description
9/11/2001	New York City	2759	8700	Two commercial airplanes were deliberately crashed into the World Trade Center
9/11/2001	Arlington, VA	189	200	Commercial airplane deliberately crashed into the Pentagon
4/19/1995	Oklahoma City	169	675	Bombing of the Murrah Federal Building
6/12/2016	Orlando, FL	50	53	Shooting at the Pulse nightclub
9/11/2001	Shanksville, PA	45	0	Commercial airplane was deliberately crashed into a field
9/16/1920	New York City	38	300	Wall street bombing
10/1/1910	Los Angeles	21	20	LA Times Building bombing
12/2/2015	San Bernadino, CA	16	23	Shooting at the Inland Regional Center
11/5/2009	Fort Hood, TX	13	44	Shooting at the Fort Hood Soldier Readiness Center
5/4/1886	Chicago, IL	12	60	Bombing of Haymarket Square

*Note that three attacks were not included in this table. The 10/31/1999 crash of Egypt Air Flight 990, which killed 217 was suspected of being terrorism but the cause was never officially determined. The 11/1/1958 crash of the hijacked Cubana Airlines Flight 495 was not intended and did not occur in the United States (it originated in Florida). And finally, the 2002 Washington DC sniper attacks killed a total of 13 people, but individually these attacks do not constitute a top-ten ranking.

Terrorism as a hazard has existed for centuries, so most people are aware of what it is and what consequences typically result when a terrorist carries out an attack. But there is nonetheless a persistent need among the emergency management and emergency services communities to understand this hazard's complex and the dynamic nature given how sudden onset occurs and how differently response unfolds. Without such knowledge, it will be difficult to reduce the community's vulnerabilities to attack, to ensure first response agencies are capable of meeting response requirements in the event of an attack (including protecting themselves and victims from WMDs), or to recover from attacks that do occur.

Terrorism is something for which there are a great many differing definitions because of its historical significance, its political implications, and its great media salience. One must take a broad view, considering much more than our

contemporary history, to appreciate these variances. If we consider the global historical context and examine the much wider range of experiences people and countries have had with terrorism (and the actions of those considered to be terrorists), we find that the standard by which we choose to measure such events has great influence on whether a person or group are deemed to be terrorists, criminals, or something else entirely. The phrase that “one man’s terrorist is another’s freedom fighter” epitomizes the difficulty in making such classifications.

Many scholars consider the earliest recorded examples of organized terrorism to be an antigovernment campaign launched by the Sicarii in the 1st century BC. The Sicarii were a fanatical religious group that used stabbings and other violent attacks against supporters of the Romans in a successful attempt to influence the Romans to leave or to be expelled from Jerusalem.

Terrorism, as a tactic, has always existed in the United States. There is an ongoing, and somewhat contentious debate, about whether or not the infamous Boston Tea Party, which is hailed as one of the instigating events in the American Revolution, is actually an historical act of terrorism. In this event, 18th century American colonists that opposed British trade policies destroyed private-sector goods in an effort to influence public opinion and the political agenda. From the British perspective at the time, it was certainly perceived as a clear-cut act of terror, and many scholars feel that classification holds true today.

Throughout the two centuries that followed the birth of the nation, government agencies, businesses, and citizens have each endured a mix of both domestic and international terrorism. While these attacks have been predominantly the result of groups operating domestically, those with international aspects have received the greatest attention given the perception of foreign incursion and the nationalist sentiments stoked by such perceptions.

Domestic and International Terrorism

The FBI defines domestic terrorism as “The unlawful use, or threatened use, of force or violence by a group of individuals based and operated entirely within the United States or Puerto Rico without foreign direction committed against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof in furtherance of political or social objectives.”

The United States Legal Code defines domestic terrorism to be, “activities that:

- Involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State;
- Appear to be intended, either:
 - To intimidate or coerce a civilian population;
 - To influence the policy of a government by intimidation or coercion; or
 - To affect the conduct of a government by mass destruction, assassination, or kidnapping; and

- Occur primarily within the territorial jurisdiction of the United States.” International terrorism, by contrast,
- “Involves violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or of any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State;
- Appear to be intended either:
 - To intimidate or coerce a civilian population;
 - To influence the policy of a government by intimidation or coercion; or
 - To affect the conduct of a government by mass destruction, assassination, or kidnapping; and
- Occur primarily outside the territorial jurisdiction of the United States, or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to intimidate or coerce, or the locale in which their perpetrators operate or seek asylum.”

Domestic terrorism in the United States has involved all forms of violence, including shootings, bombings, physical attacks and beatings, arson, lynching, vandalism and property destruction, as well as threats of all of these methods and others, all for the purpose of causing intimidation or to influence public opinion and action on a particular issue the perpetrators find important. A few examples of these many groups that have been accused of or labeled as terrorist organizations in the United States, and the nature of their efforts, include:

- *The Ku Klux Klan (KKK)*—The KKK is a white supremacist organization that has used lynching, public rallies, intimidation tactics such as cross burnings and assaults at voting booths, in order to spread the organization’s ideology and to influence the political processes.
- *Anarchists*—Anarchists have been tied to terrorist attacks as far back as 1886. That year, a bomb was detonated by anarchists in Haymarket Square in Chicago during a labor rally. They successfully attacked again in 1901, when an anarchist assassinated President McKinley. Anarchists were also suspected of a 1917 bombing of a Milwaukee police station that killed ten people, several mail bomb attacks in 1919, and the 1920 bombing of Wall Street that killed 38 people and injured over 140 more. Anarchists are responsible for two of the ten deadliest attacks on American soil (see [Table 9.1](#)).
- *Unions*—Labor unions have used terrorism to influence public opinion. Several labor union members have staged attacks to gain support for workers’ rights, and these incidents have caused significant injuries, deaths, and destruction. In 1910, the McNamara brothers blew up the LA Times building in Los Angeles, killing 21 people, to protest the obstruction of unionization in the company. Union leaders were also suspected of detonating a bomb in San Francisco in 1916 that killed 10 people and injured 40 more.

Other groups that have been labeled as terrorists on account of their suspected or actual violent and/or destructive actions include:

- The Black Panthers
- Weather Underground
- The Army of God
- Earth Liberation Front
- Animal Liberation Front
- Aryan Nations
- The Boricua Popular Army
- The Jewish Defense League
- The Symbionese Liberation Army

And of course, there have been a great number of single or “lone-wolf” terrorists that have carried out attacks for purposes of personal gain, personal ideology, and even for reasons that have no rational explanation. Some of these lone-wolf terrorists have caused incredible levels of fear and have required significant resources to track down and stop them. Some of the most notorious lone-wolf terrorists include:

- George Matesky, otherwise known as the Sunday Bomber, who terrorized New York City from 1940 to 1956 with a series of bombings after being injured at his job at an electrical plant and feeling he had not received the compensation he deserved.
- Radical leftists Sam Melville and Jane Alpert bombed a number of different federal and state buildings in New York in 1969, injuring 20 people and causing significant damages.
- Muharem Kurbegovich, known as the “Alphabet Bomber,” who unleashed a terror campaign in Los Angeles in 1974 in an attempt to abolish laws related to immigration and naturalization, including the bombing of Los Angeles International Airport, firebombing houses and cars, burning down two apartment buildings, attempting to bomb a bus station, and threatening to use poisonous gas against the entire city.
- Ted Kaczynski, also known as the Unabomber, who carried out a nationwide series of planted and mailed bombs between 1978 and 1995 to protest modern technology and innovation.
- Timothy McVeigh and Terry Nichols, who sought revenge against what they saw as government tyranny in the Waco, Texas siege of the Branch Davidians and the incident at Ruby Ridge, detonated a truck bomb in front of the Alfred P. Murrah Federal Building in Oklahoma City in 1995. This event remains the most devastating single act of domestic terrorism in US history ([Fig. 9.1](#), [Table 9.1](#)).



FIGURE 9.1 Oklahoma City, Oklahoma, Apr. 26, 1995—A scene of the devastated Murrah Building following the Oklahoma City bombing. FEMA News Photo.

Terrorism, and terrorist weapons, exist because there are terrorists and terror organizations that need them. To the emergency manager and the first responder, the fact that there are terrorists and that are motivated by some ideology or prospect of personal gain is of less concern than the methods through which they hope to achieve their stated or unknown intent. In other words, the first responder cares more about what a terrorist's bomb might do, then why the bomb was made or why it was detonated.

However, there is a reason for the emergency manager to understand the terrorists and their intent, as the nature of the attack and of the weapon of choice can differ depending on who placed it. Knowing who the terrorists' target is, and what their hope is in terms of causing terror, does help to establish what level of danger is faced by the responders themselves and the victims and civilians they are trying to protect. For instance, there have been many cases where terrorists have placed a small explosive device presumably to lure first responders into close proximity, then detonating a second, much larger device in hopes of targeting the responders for a greater terror-inducing effect.

This was the case in an attack on an Atlanta family planning clinic in 1997. In his attack on the Sandy Springs Professional Building, which housed the clinic, lone-wolf terrorist Eric Rudolph placed two bombs that were timed to detonate an hour apart from each other. The first bomb caused attention but did not do very much damage. The second bomb was much bigger and injured seven responders. It would have done a lot more damage but someone had inadvertently parked their car directly in front of the bomb which absorbed most of the blast.

Terrorists and terrorist organizations are typically grouped according to their motivating factors, namely, the ends to which they believe terrorism is a viable means. The Council on Foreign Relations, a nonprofit think tank that specializes in international affairs, groups terrorists into seven categories.

- **Nationalist Terrorism**—Nationalists are people that wish to separate from the government in the hope of forming an independent state of their own. Because these terrorists use attacks to draw attention and sympathy to their cause, they tend to target the government they see as oppressive rather than general civilian targets. Their actions generally try to achieve low levels of violence so that the international community do not see them as barbaric or dangerous, but they understand that a certain level of violence or threats of violence are typically required to get the media attention they need.
Examples of nationalist terrorists include the Irish Republican Army (IRA) and the Palestinian Liberation Organization (PLO).
- **Religious Terrorism**—Religious terrorist groups use terrorism as a means to carry out what they envision to be a holy mission. This type of terrorism is especially dangerous because it is rarely constrained by national boundaries and it often operates outside of any normal legal or civil systems. Bruce Hoffman of Georgetown University characterizes modern religious terrorism as having three traits: (1) the perpetrators must use religious scriptures to justify or explain their violent acts or to gain recruits; (2) clerical figures must

be involved in leadership roles; and (3) perpetrators use apocalyptic images of destruction to justify the acts. Religious terrorists are often known for using suicide attacks under the promise of martyrdom. This in turn increases the danger associated with this type of attack because the perpetrator does not care about getting caught and is more likely to be brazen in their actions. Examples of religious terrorist organizations include the Islamic State in Iraq and the Levant (ISIL, also called ISIS and Daesh), al Qaeda, Aum ("Omu" Shinrikyo), the Army of God, Hamas, and Hezbollah.

- **State-sponsored terrorism**—State-sponsored terrorist groups often do the “dirty work” of a sovereign nation, working covertly in the role of mercenary. Their actions serve to inflict harm on enemy nations or to instigate conflict. These groups can be highly effective in their attacks and can use highly technical weapons and tactics because they have access to the higher levels of funding required to carry out such attacks. Some people have claimed that the United States support of the Afghan Mujahadeen, to which Al Qaeda traces many of its roots, is an example of state-sponsored terrorism, but this is of course greatly disputed. The Libyan involvement in the bombing of Pan Am flight 103, which killed 259 people, is a clear-cut example of state-sponsored terrorism. Iran’s support of anti-US and anti-Sunni militias in Iraq is another example. Other countries accused by the US Department of State of sponsoring terrorism include Sudan and Syria. Countries that were once on this list but have since been removed include Cuba, Iraq, Libya, North Korea, and Yemen.
- **Left Wing Terrorism**—Left wing terrorist groups are those that try to reduce the influence of capitalism in favor of communist or socialist ideologies and frameworks. These groups generally try to avoid significant civilian casualties in favor of destroying what they see to be symbols of capitalism. Left-wing terrorist groups have a long history of operating in the United States, and many of the terrorist attacks that took place in the early 19th century were attributed to left-wing terrorists. Examples include the FARC in Colombia, the Shining Path in Peru, Red Brigade in Italy, and the Japanese Red Army.
- **Right Wing Terrorism**—Right wing terrorist groups are those that use terrorism to try to establish a fascist state. These groups carry out attacks to intimidate or to remove liberal, democratic elements from their government or from society. Right wing groups often have a weaker organizational structure than what is seen with leftist groups, and they rarely garner support outside of their core group. Many of the right wing terrorist groups are also characterized by racist tendencies, and a hatred of immigrants and those they perceive to be outsiders, and include the neo-Nazis, Skinheads, and the Aryan Nations. A recent attack by a right wing terrorist that received a significant amount of international press as a result of its devastating consequences was the bombing and shooting assault by Anders Behring Breivik in Norway. This attack, which took place on Jul. 22, 2011, began with a car bomb that killed 8 and wounded over 200, and was followed with an attack on a summer camp just 2 hours later that killed 69 and wounded 110

more.

- **Anarchist Terrorism**—Anarchist terrorist groups are known to attack any organized government structure in hopes of causing destabilization—whether of the country they are in or of the global political framework. Although anarchist groups have only posed a relatively minor threat since their presence began to decline in the early 20th century, the surge in anti-globalization movements has brought about a resurgence in the anarchist movement—and their impacts are regularly shown in the media. Anarchists have caused significant damage in US cities to correspond with meetings of the United Nations, the World Bank, and other international organizations. Anarchist vandalism in Seattle during the 1999 World Trade Organization Ministerial Conference, or N30, led to what is now known as the “battle of Seattle” wherein anarchist individuals acting within a general protest involving upwards of 40,000 people, began smashing the storefronts and vandalizing the interior of several symbols of capitalism including McDonalds, Gap, Bank of America, and Nike.
- **Single-Interest Terrorism**—This category of terrorists is having an increased impact in the United States and throughout the world. Single-interest terrorists are individuals or groups that try to bring attention to a nonpolitical, nonreligious issue they believe needs to be addressed by attacking who they see to be perpetrators or organizers of the activity they oppose. Examples of single-interest terrorists include environmental, animal rights, agrarian rights, and anti-abortion groups, though some would consider the anti-abortion groups to be religious terrorists if their agenda includes other religiously motivated issues like anti-gay actions. Single-interest terrorists have been known to attack research facilities that use animals, especially those that use primates, in pharmaceutical or product research. The UCLA Primate Research Project, for instance, attempted to burn down the houses of a number of researchers and continues to publicize the names and addresses of researchers presumably to incite actions against them. The Earth Liberation Front is an environmental terrorist group operating in a number of countries worldwide that has conducted a campaign of arson, vandalism, and sabotaging of utility services, to tout their messages and intimidate the individuals and groups they see as promoting poor environmental practices. Many of the maniacal lone-wolf terrorists are also single-interest terrorists. Ted Kaczynski, the infamous Unabomber, was a single-interest terrorist that was against technology and modernization that killed 3 people and injured 23 more by sending bombs through the mail. Terrorism has traditionally been treated as a criminal act, whether it was carried out by organizations or individuals, throughout the history of the United States. Likewise, terrorism was investigated and prosecuted using the same criminal justice resources, authorities, and frameworks. A major shift in this manner of operations began in 1993 when the World Trade Center was attacked by Ramzi Yusef, a radical Islamist and al Qaeda member.

Terrorist Actions

1993 World Trade Center Bombing

In 1993, a terrorist with Kuwaiti citizenship named Ramzi Yousef bombed the World Trade Center. Yousef was born in Kuwait to Pakistani parents. His parents' background is notable in that his mother is believed to be the sister of Khalid Sheikh Mohammed, the mastermind behind the 9/11 attacks. Yousef was western-educated and trained, and earned an electrical engineering degree from the Swansea Institute in Wales as well as a degree at the Oxford College of Further Education. He was trained in bomb-making skills at a terrorist training camp in Pakistan in the early 1990s.

In 1992 Yousef moved to the United States, using an Iraqi passport. He entered at the same time as a companion who purposely carried poorly falsified documents in order to draw the attention away from Yousef and was detained by the Immigration and Nationalization Service for 3 days, where he eventually requested asylum and was released. He used a fake name and was issued a legitimate Pakistani passport by the Government of Pakistan through their Consulate in New York.

With help from two other people, Yousef assembled a nitrate fuel oil bomb weighing 1500 pounds, using materials that were easy to get at the time. These included urea, nitric acid, compressed hydrogen, and nitroglycerin. The bomb was loaded into a Ryder rental van on Feb. 26, 1993, and the van was driven into the parking garage below the North Tower.

Yousef's intent was to cause the North Tower to become weakened by the blast, and then collapse into the South Tower killing thousands of people in the process. The bomb detonated and did cause significant damage to six floors, and it started a fire. Six people were killed, and over 1000 were injured, but the towers withstood the impact of the massive bomb. Yousef quickly fled the country after the attack, but before doing so he sent a letter to the *New York Times* claiming credit for the attack (and stating that it was done in response to American policies that were supportive of Israel). He was added by the FBI to the top ten list of most wanted fugitives, and was finally caught and arrested in Pakistan two and a half years later following a tip-off.

The Bombing of the Alfred P. Murrah Federal Building

The next watershed terrorism event, and to date the deadliest and most destructive act of domestic terrorism, was the bombing of the Alfred P. Murrah Federal Building in Oklahoma City. This attack was carried out by two former US Army soldiers, Timothy McVeigh and Terry Nichols. McVeigh and Nichols felt that the US Government had overstepped its bounds with regards to gun control, and in its handling of the Ruby Ridge, Idaho and Waco, Texas standoffs (both were sieges conducted by the US Department of Justice to enforce federal

law that resulted in the loss of life of US citizens). McVeigh visited the Waco Branch Davidian complex during its siege and vowed afterwards to bomb a federal building in retaliation.

McVeigh and Nichols traveled the country scoping out buildings for one that they thought would impact many federal agencies but spare nonfederal citizens. They chose the Murrah building because there were 14 federal agencies with offices in the building and because there were few buildings close by that they believed would be directly impacted by their bomb. The pair purchased or stole all of the materials to build the bomb, which cost them only about \$5000 including the cost of the truck rental. They assembled the 5000 pounds of bomb materials in the back of the truck in Kansas on Apr. 17 and 18, 1995, and drove to Oklahoma City on the morning of the 19th. McVeigh parked the truck under the drop-off for the Murrah Federal Building's daycare center after lighting two fuses set up for the bomb, and walked away towards a getaway vehicle driven by Nichols.

The bomb caused a partial collapse of the building and sent a shockwave through the city that destroyed or damaged 324 buildings in a 16 block radius. The explosion could be heard 55 miles away and glass was shattered in an additional 258 buildings. Damages totaled \$650 million, and hundreds of people were left homeless. More importantly, 168 people died, many of whom were children in the building's daycare center, and almost 700 people were injured.

By a stroke of luck, McVeigh was arrested within 90 minutes of the bombing for driving without a license plate on his vehicle and then for carrying a concealed weapon. Investigation into fragments from the truck found at the blast-site quickly implicated McVeigh, who was still in custody. He and Nichols were both found guilty, and while McVeigh was sentenced to death and subsequently executed, Nichols was given a life sentence without the possibility of parole.

The Khobar Towers Bombing

The next four major terrorist attacks involving US interests occurred overseas. The first of these took place on Jun. 25th, 1996. This attack represented an escalation of engagement by Islamic Anti-American terrorist groups that were and continue to be dedicated to forcing the United States to disengage from the Middle East and Middle-Eastern regional politics.

To carry out this attack, militants filled a sewage tanker truck with about 5000 pounds of plastic explosives, which is equivalent to approximately 20,000 pounds of TNT. They drove the truck as close to a US Marine barracks building located at the US Central Command in Riyadh as they could, and blew it up. Their hope was that the event would turn US public opinion against United States involvement in the Middle East. This bomb was truly massive in its power, and remains the largest terrorist bomb ever used against the United States.

A US military guard onsite recognized that a bombing was imminent and

began evacuations immediately, but the force of the bomb was so great that it tore off the front of the building and killed 19 people. His actions did reduce the number killed by quite a bit, however, because most of the people were in the stairwells when the bomb went off and the stairways withstood the blast.

Kenya and Tanzania Embassy Bombings

Two years later, on Aug. 7, 1998, Islamic militants again attacked the United States using coordinated bombings against US diplomatic missions overseas. It was this set of attacks that placed Osama Bin Laden and Ayman al-Zawahiri on the forefront of US counterterrorism efforts, and which finally got Bin Laden on the FBI list of most wanted fugitives.

The attacks were carried out using small trucks, each carrying about 2000 pounds of explosives. The trucks were parked as close as possible to the two embassies on the morning of Aug. 7th, which is a date that coincided with the anniversary of the arrival of the US military in Saudi Arabia.

In both events, the majority of victims were local African citizens, but 12 Americans were also killed. In Nairobi, a nearby building sustained the most damage, and a majority the victims were located there. Many of them had heard gunshots right before the explosion and rushed to the window only to be blinded by glass as it shattered from the bomb's shock wave. There were fewer casualties in Dar es Salaam simply because the US embassy was not located in the center of the city and there were fewer buildings in the immediate area.

USS Cole Bombing

Just over 2 years after the embassy bombings in Kenya and Tanzania, the US Navy destroyer *USS Cole* was attacked in Yemen while refueling in the Port of Aden. This was again an attack planned and carried out by al Qaeda. The attack was performed by loading a small boat with about 500 pounds of explosives and steering it right next to the *Cole*. The ship was prohibited by the prevailing rules of engagement from firing on the small craft. The operator detonated the bomb in a suicide attack, causing a large 40-foot hole that tore into the ship's galley. The attack killed 17 sailors and injured 39 more. Osama bin Laden was again implicated in the attack, and he later boasted about it on camera thus strengthening these suspicions.

As for whether the attack was terrorism can be debated, and many have stated that it is not, because it targeted a military vessel and all of those killed were uniformed military. But what is important about this event is that, like the US embassy bombings in Kenya and Tanzania, it had a significant influence on the nature of counterterrorism actions and policies that were underway in the United States, and the nature of the United States response to each of the events played heavily into the planning and carrying out of the 9/11 attacks.

The 9/11 Attacks in New York, Virginia, and

Pennsylvania

Perhaps the most extensively planned and most devastating terrorist attack of all time took place on 9/11, 2001. This coordinated event has changed the course of history in ways that the planners likely never imagined. In addition to wars that were started in both Afghanistan and Iraq, much of the instability throughout the Middle East and North Africa today can be traced in-part to these actions and their after-effects. And all of that is in addition to the many ways that society and life in general have changed almost everywhere in the world.

For emergency management, the impacts and implications brought about by this event have been extraordinary. The very concept of the emergency management profession is much different today, and the frameworks and organizational structures according to which governments at all levels prepare for, mitigate, respond to, and recover from disasters, whether they are natural, man-made, or terrorism-based, have also changed beyond what could ever have been anticipated. Hundreds of billions of dollars have been spent on the recovery from the initial event, and the preparedness and organizational actions to prevent future attacks or prepare for their management should they occur. Add in the costs related to the wars fought as a result, and the cost reaches into the trillions of dollars.

2013 Boston Marathon Bombing

On Apr. 18, 2013, the Tsarnaev brothers (Dzhokhar and Tamerlan) detonated improvised explosive devices crafted out of pressure cookers and other easily-obtainable materials near the finish line of the Boston Marathon. They claim to have learned how to make these bombs through an online magazine published by a Yemen-based al Qaeda cell. The explosions killed 3 people and injured another 264, many of whom lost limbs because the bombs contained bolts, nails, and other shrapnel to maximize human impacts ([House Homeland Security Committee, 2014](#)). The attacks resulted in a massive manhunt that included a request by police that all residents in the search area remain indoors, and a decision to shut down public transportation and businesses in the search area. While Tamerlan was killed during the manhunt when his brother accidentally ran him over, Dzhokhar was apprehended. During subsequent interrogations he claimed that their motivation was Islamic extremism reacting to US involvement in the wars in Iraq and Afghanistan. On Jun. 24, 2015, Dzhokhar was sentenced to death.

San Bernadino, CA Attack

On Dec. 2, 2015, married couple Syed Rizwan Farook and Tashfeen Malik attacked a Christmas party and training event that was being held at the San Bernadino County Department of Public Health. Farook, an American citizen, was an employee of the Department of Public Health and knew the building

and the targeted employees well. Malik, a Pakistani citizen with legal residence status, was not. The couple used rifles and handguns to attack the approximately 80 people in attendance, killing 14 people and injuring 24. They also left a remote controlled explosive device in the facility that failed to detonate. After the shooting the couple fled but were engaged soon afterwards by police. Both died in the firefight that ensued. At first the event was thought to be a workplace dispute, but it soon became clear that religious terrorism was involved given Farook's claiming allegiance to ISIL through social media (and from materials found at the couple's home).

Orlando Nightclub Shooting

On Jun. 12, 2016, Omar Mateen entered Pulse nightclub in Orlando, Florida armed with an assault rifle and a handgun. The nightclub was guarded by an off-duty police officer who was unable to stop the more heavily-armed intruder. Mateen immediately began shooting patrons, ultimately killing 49 and injuring 53. The shooter made several phone calls during the attack to the 911 emergency line and to news organizations claiming his allegiance to the terror organization ISIS and stating that the attack was in response to the US bombing "his country" (Mateen was born in the United States to Afghani parents.) Mateen had been interviewed by the FBI in 2013 and 2014 as a "person of interest" related to comments he had made insinuating terrorist intentions, but the investigations were closed. Over 100 officers descended on the scene, eventually engaging and killing the shooter approximately 3 hours after the assault began. The attack unquestionably targeted the LGBT community, but the significance of the shooter selecting a well-known gay establishment remains unclear.

The Monumental Human, Economic, and Social Costs of the September 11th Attacks

The cost to the federal government for the response and recovery of the World Trade Center bombing was formally estimated to be \$20 billion, though the exact number will never be known due to the complex ways in which the nation's economy, infrastructure, and social fabric was impacted by these events. FEMA provided 42% of this federal share with \$8.818 billion in aid. HUD gave the second largest amount, \$2.48 billion, or 17%, while DOT ranked third at \$2.37 billion (11.5%). All other federal agencies contributed a total of \$820 million, which amounted to 4% of the total federal share. Also included in the federal figures of aid are the tax benefits associated with the New York City Liberty Zone, an area of the city where new tax incentives have resulted in over \$5 billion in indirect economic aid to the city and its residents.

Since Sep. 2001, the indirect costs associated with securing the nation from future acts of terrorism have eclipsed this \$20 billion figure, and include the costs associated with creation of the Department of Homeland Security, government control of airport security, overtime of police and fire department staff, increased security at special events and at critical facilities, preparedness grants for equipment and training provided to state and local governments, technology research, and port security, among many others. Include the cost of the wars in Iraq and Afghanistan—considered preemptive action to mitigate the risk of an attack on domestic soil—and the costs of these combined measures across the 15 years since the terrorist attacks, the cost reaches above \$1 trillion.

Investigations discovered that the 9/11 terrorist attacks required years of planning, a relatively large group of conspirators, and a more significant amount of money than had been spent on previous attacks. Khalid Sheikh Mohammed conceived of the idea for the attacks around 1996, and eventually received permission to begin operational planning from Osama bin Laden in 1998. A small group of five or so planners recruited volunteers to carry out the attack and focused on getting them entry into the United States. The attackers were selected for a range of skills, including their ability to "blend in" in America, their ability to excel in flight lessons, and their strength. The attackers themselves were given limited information, and it is even believed that some of the hijackers did not know their mission was suicidal until they were in the midst of the attack.

On the morning of 9/11, three teams of five hijackers, and one team of four, boarded four different airplanes in Boston, New York, and Virginia. Shortly into each flight, the teams overpowered the flight crew and took control of the airplanes. Each plane was steered towards a predetermined target, though only three would eventually reach that target. One plane was crashed into each of the North and South towers of the World Trade Center in New York City ([Fig. 9.2](#)), one plane was crashed into the Pentagon building in Virginia, and the fourth crashed into a field in Shanksville, Pennsylvania (likely after the

hijackers were overpowered by passengers who realized what was happening.)

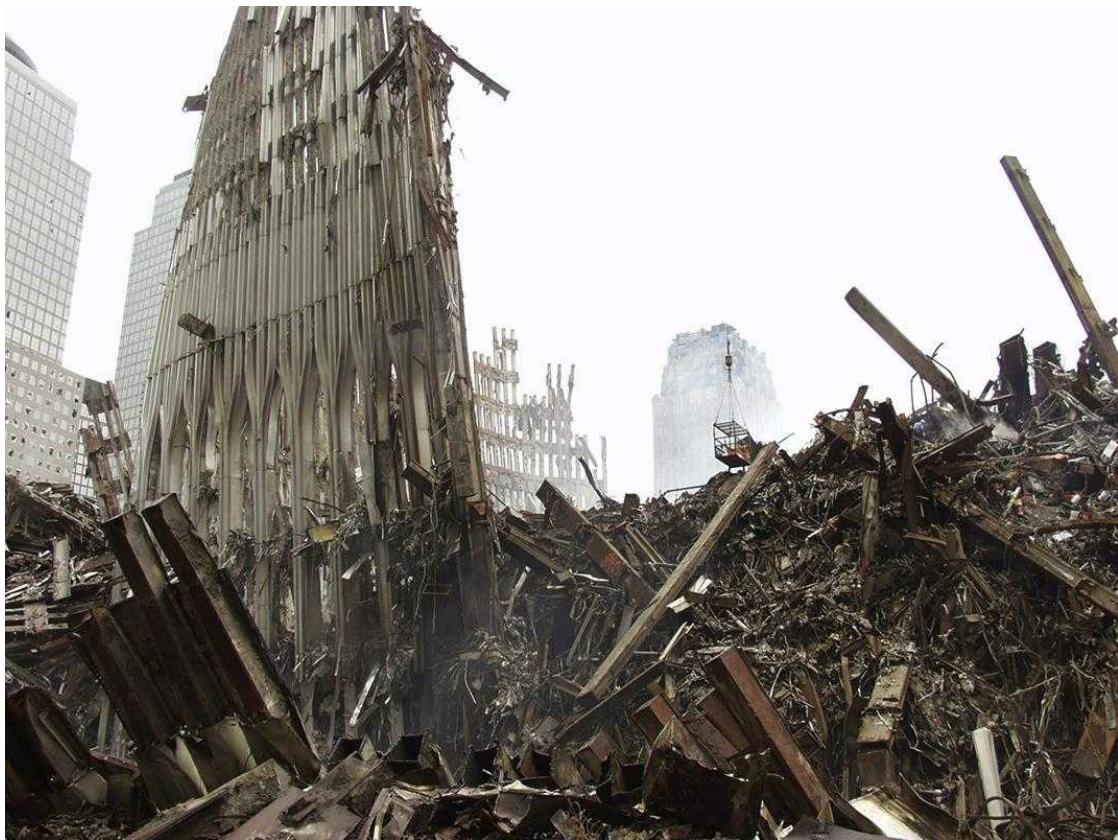


FIGURE 9.2 New York City, New York, Sep. 25, 2001—Fragments of the World Trade Center facade are all that remain of the 110-story structures that once dominated the skyline of lower Manhattan. Photo by Mike Rieger/FEMA News Photo.

The use of fuel-filled planes caused catastrophic fires in all three buildings impacted, and this led to collapse of both World Trade Center towers and the wing of the Pentagon directly affected. Because the towers burned for approximately an hour before collapsing, hundreds of firefighters from throughout the region had ample time to respond and were thus among those killed. In total the attacks caused:

- 2974 deaths, not counting the 19 terrorists (All but 50 of these were civilian deaths)
- 343 firefighter deaths and 75 police officer deaths at the World Trade Center
- 2337 injuries to persons

Most of those killed were in New York. 125 people were killed and 76 were injured at the Pentagon, and 246 people were on the four airplanes (including the crewmembers).

The attacks also caused catastrophic financial impacts, both as a direct result of the businesses and industries located in and around the World Trade Center, the national and global impacts related to a slowdown in business and tourism travel, increased expenses related to new shipping rules and regulations, and

the costs associated with the military engagements in Iraq and Afghanistan that followed. There were 430 companies that operated in the World Trade Center, and on an average day, there were 50,000 employees and about 140,000 visitors to the complex. In addition, the subway stations under and near the World Trade Center were destroyed. For a time, there was even fear that the impact to the foundation of the towers themselves might result in the flooding of the entire south portion of Manhattan.

Response to the attacks was unprecedented, both in terms of the search and rescue operation required (which included the recovery of about 19,500 body parts over about 230 days), the effort to identify victims, the debris removal and cleanup operation from such a dense urban environment, and the nature of the disaster area as a crime scene and point of national and international attention and concern.

Interestingly, it was the 1993 bombing of the World Trade Center that was credited with reducing the number of casualties. It was after that attack that the buildings were retrofitted to allow for faster and more efficient evacuation, which included adding an additional stairway to each tower, and the widening of the existing stairways. Also, the tower management performed regular evacuation drills, so most of the people who worked there knew what to do. In the end, the vast majority—a full 90% of those who died in the towers—were above the points of impact where evacuation became impossible in most cases.

In addition to the local responders, federal, state, and nongovernmental groups (e.g., the Red Cross and Salvation Army) were on the scene in a matter of hours establishing relief centers and trying to meet the needs of victims and first responders. The scope of relief efforts that were ultimately provided in New York, for an event that had, relatively speaking, such a small geographic footprint, were unprecedented, and included:

- 55,494 individual victim cases
- 240,417 mental health contacts
- 133,035 health services contacts
- 60 shelters opened, with a population reaching over 3500
- 101 mass care points of distribution opened
- Over 14 million meals served

There were almost 60,000 disaster workers that responded to the incident before it was over. The number of responders killed in this attack deserves special mention. On a typical year, approximately 85–110 firefighters die in the line of duty nationwide. In this single event, 343 firefighters were killed, more than would be expected over the course of 3 years in all events in all communities in the country. Seventy-five police officers were also killed, which also represented a record for a single event by a long stretch. These deaths led to a much greater focus on responder safety and security in all disaster events, whether terrorist-related or otherwise, and government funding to support them in their efforts increased dramatically. This tremendous loss of life also resulted in a full reexamination of the protocols and the procedures that first responders generally followed when responding to events involving terrorism and/or great personal risk.

Ultimately, the 9/11 attacks resulted in an economic impact to New York City estimated to be between \$83 and \$95 billion dollars. This includes \$22 billion in structures, \$9 billion in the future earnings of the people that died, and between \$53 and \$64 billion in local commerce and revenue. The economic impact of the attacks was felt throughout the United States and the world, causing jobs to be lost and businesses to fail in communities hundreds and thousands of miles from Ground Zero. It was estimated that around 1.8 million jobs were lost as a result of the attack, 100,000 of which were in lower Manhattan and 237,000 of which were in the travel industry.

The costs incurred by the federal government in responding to the attacks, which included emergency assistance, assistance to victims, businesses, and NGOs, debris clearance, and much more, totaled around \$12 billion ([Fig. 9.3](#)).



FIGURE 9.3 New York City, New York, Oct. 13, 2001—A month later, New York firefighters were still at work putting out fires at the site of the World Trade Center. Photo by Andrea Booher/FEMA News Photo.

Post-9/11 First Responder Valuation

In the summer of 2002, two 9/11-related after-action reports were released: "Improving NYPD Emergency Preparedness and Response," which was prepared by McKinsey & Company for the New York City Police Department, and "Arlington County After-Action Report on the Response to the 9/11 Terrorist Attack on the Pentagon," which was prepared for Arlington County, Virginia, by Titan Systems Corporation. Both reports are based on hundreds of interviews with event participants and reviews of organizational plans. They have served to provide many lessons and recommendations through which change in the emergency discipline has emerged.

The NYPD report ([McKinsey & Company, 2002](#)) did not pass judgment on the success or failure of the NYPD on 9/11 but rather assessed the NYPD's response objectives and instruments in order to identify 20 improvement opportunities for the NYPD, of which 6 merited immediate action:

- Clearer delineation of roles and responsibilities of organizational leaders
- Better clarity in the chain of command
- Radio communications protocols and procedures that optimize information flow
- More effective mobilization of response staff
- More efficient provisioning and distribution of emergency and donated equipment
- A comprehensive disaster response plan with a significant counterterrorism component

The "Arlington County After-Action Report" did declare the response by the county and others to the Pentagon terrorist attack a success that "can be attributed to the efforts of ordinary men and women performing in extraordinary fashion" ([Titan Systems Corporation, 2002](#)). The terrorist attack on the Pentagon provided an extreme test of the plans and skills of responders from Arlington County, Virginia; the federal government; and other jurisdictions and organizations that responded. Select notable facts about the response to the 9/11 attack at the Pentagon, as compiled in the report, include the following:

- The first Arlington County emergency response unit arrived at the crash site less than 3 minutes after impact.
- More than 30 urban search and rescue teams, police departments, fire departments, and federal agencies assisted Arlington's police and fire in the rescue. Some of these important partners included the FBI, FEMA, US Park Police, the Defense Protective Service, the Military District of Washington, the Metropolitan Washington Airport Authority, the Virginia Department of Emergency Management, and USAR teams from Albuquerque, New Mexico; Fairfax County, Virginia; Montgomery County, Maryland; and Memphis, Tennessee.
- Captain Dennis Gilroy and the team on Foam Unit 161 from the Fort Meyer

Fire Station were on-site at the Pentagon when Flight 77 crashed into the building. Firefighters Mark Skipper and Alan Wallace, who were next to the unit, received burns and lacerations but immediately began helping Pentagon employees who were trying to escape through first-floor windows.

- Captain Steve McCoy and the crew of Engine 101 were on their way to fire staff training in Crystal City when they saw the plane fly low overhead and an explosion from the vicinity of the Pentagon. McCoy was the first person to call Arlington County's Emergency Communications Center to report the plane crash.
- The Arlington County American Red Cross chapter coordinated support from the Red Cross. The chapter had 80 trained volunteers at the time of the attack, but the organization's mutual-aid arrangements with other chapters garnered nearly 1500 volunteers who helped support the emergency services personnel, victims, and their families.
- Business supporters set up temporary food service in the Pentagon parking lot for rescue workers. Over 187,940 meals were served to emergency workers. Many other businesses brought phones for rescuers to call home, building materials, and other vital necessities.
- More than 112 surgeries on 9 burn victims were performed in 3 weeks. One of the burn victims died after having over 60% of her body burned. There were 106 patients that reported to area hospitals with various injuries.

The "Arlington County After-Action Report" contains 235 recommendations and lessons learned, each of which must be understood within the context and setting of the Pentagon response. Some specifically apply to a particular response element or activity. Others address over-arching issues that apply to Arlington County and other jurisdictions throughout the country, particularly those in large metropolitan areas. These recommendations are not weighted or prioritized since their intent was to leave such decisions up to the operational staff drawing lessons from the report. What is interesting about these recommendations is that while they were developed in response to a terrorist attack, they are fully transferable into the all-hazards context. These are some of their recommendations:

1. The Incident Command System (ICS) and Unified Command. The primary response participants understood the ICS, implemented it effectively, and complied with its provisions. The Arlington County Fire Department (ACFD), an experienced ICS practitioner, established its command presence literally within minutes of the attack. Other supporting jurisdictions and agencies, with few exceptions, operated seamlessly within the ICS framework. For those organizations and individuals unfamiliar with the ICS and Unified Command, particularly the military, which has its own clearly defined command and control mechanisms, the Incident Commander provided explicit information and guidance early during the response and elicited their full cooperation.

2. Mutual Aid and Outside Support. The management and integration of mutual-aid assets and the coordination and cooperation of agencies at all government echelons, volunteer organizations, and private businesses were outstanding. Public safety organizations and chief administrative officers

(CAOs) of nearby jurisdictions lent their support to Arlington County. The response to the Pentagon attack revealed the total scope and magnitude of support available throughout the Washington metropolitan area and across the nation.

3. Arlington County Comprehensive Emergency Management Plan (CEMP). The CEMP proved to be what its title implies. It was well thought out, properly maintained, frequently practiced, and effectively implemented. Government leaders were able to quickly marshal the substantial resources of Arlington County in support of the first responders, without interfering with tactical operations. County board members worked with their counterparts in neighboring jurisdictions and elected federal and state officials to ensure a rapid economic recovery, and they engaged in frequent dialog with the citizens of Arlington County.

4. Employee Assistance Program (EAP). At the time of the Pentagon attack, Arlington County already had in place an aggressive, well-established EAP offering critical incident stress management (CISM) services to public safety and other county employees. In particular, the ACFD embraced the concept and encouraged all of its members to use EAP services. Thus, it is not surprising that the EAP staff was well received when they arrived at the incident site within 3 hours of the attack. During the incident response and in follow-up sessions weeks afterward, the EAP proved invaluable to first responders, their families, and the entire county support network. This is a valuable resource that must be incorporated in response plans.

5. Training, Exercises, and Shared Experiences. The ACFD has long recognized the possibility of a weapons of mass destruction (WMD) terrorist attack in the Washington metropolitan area and has pursued an aggressive preparedness program for such an event, including its pioneering work associated with the Metropolitan Medical Response System (MMRS). In preparation for anticipated problems associated with the arrival of Y2K, the Arlington County government thoroughly exercised the CEMP. In 1998, the FBI Washington Field Office (WFO) established a fire liaison position to work specifically with area fire departments. Washington metropolitan area public safety organizations routinely work together on events of national prominence and shared jurisdictional interests, such as presidential inaugural celebrations, heads of state visits, international conferences such as the periodic International Monetary Fund (IMF) conference, and others. They also regularly participate in frequent training exercises including those hosted by the Pentagon. All this and more contributed to the successful Pentagon response.

Critical Thinking

Do you feel that the recommendations of the Arlington County report are relevant to small communities, or do they apply only to large metropolitan areas? Explain your answer.

Statutory Basis of Terror Threat Management

Statutory authority and legal frameworks guiding the management of terrorist incidents as exists today is really the junction between the evolution of emergency management statutory authority and the evolution of counterterror and law enforcement statutory authority. Prior to the Oklahoma City bombing, at least at the national level, there was little crossover between the emergency management communities who dealt with consequence management, and the federal investigations and intelligence communities that dealt with tracking and prosecuting terrorists and terror organizations, and finding those responsible once the attacks occurred.

However, after 9/11, when FEMA lost its cabinet-level status and was moved into the new Department of Homeland Security—which was an agency born as a result of a terrorist attack—terrorism prevention, preparedness, response and recovery became central to the emergency management mission. And because so much of the state and local capacity to manage all incidents is funded and guided by the federal level, this ideological shift quickly trickled down to these levels.

Today, emergency managers plan and train for the response to and recovery from terrorist attacks, and they work within their communities to find better ways to harden targets from terrorists and protect all aspects of the population, infrastructure, and the economy from harm. This is something of a new role for them, but a very necessary role given these directives and laws that are both passed down from the federal level and also instituted locally as well.

The primary federal agency responsible for emergency management in terrorist incidents, as is true in all hazards, is the Department of Homeland Security (DHS). This agency, and the function of homeland security itself, are both primarily the result of ongoing legislative actions that have happened since the 9/11 attacks. But it is important to note that these actions were contemplated well before the attacks but were largely unsupported given that the public had such little apparent concern about terrorism at that time (despite the fact that the nation had been impacted by hundreds of other domestic and international terrorist attacks throughout history).

Early Legislation, Action, and Authorities

Statutory authority for emergency management involvement in terrorism response and recovery traces back to the 1878 passage of the Posse Comitatus Act, which effectively separated the military and police forces and gave default jurisdiction to the local authorities over federal authorities on law enforcement matters. This served the country well until the Cold War, when the primary domestic concern of government emergency management was a possible nuclear attack from abroad. The fears people had about a mass casualty catastrophic incident, which local communities were clearly unprepared to manage, led to the rise of community-based civil defense programs throughout

the country. Most towns and cities established bomb and nuclear fallout shelters, primarily by identifying government buildings that were suitable for that reason, and people learned how to act if an attack happened.

It was the Federal Civil Defense Administration, or FCDA, that supported communities as they did this, but because this agency had such limited resources, a companion office in the Department of Defense, the Office of Defense Mobilization, was created. This office focused on setting up rapid response capabilities in the event of an attack, and eventually the two offices were merged.

In the 1960s, to deal with the growing risk from natural hazards, the Kennedy administration created the Office of Emergency Preparedness inside the White House. This office was designed to deal with large-scale events but did not address civil defense responsibilities, which remained with the DOD's Office of Civil Defense. The 1974 passage of the Disaster Relief Act increased the ability of the federal government to assist in disaster response from all types of emergencies, but continued to distinguish different responsibilities between different agencies. The creation of FEMA and the consolidation of emergency preparedness, mitigation, and response activities into a single federal agency followed in 1979 through Carter's Reorganization Plan Number 3.

On Nov. 23, 1988, President Reagan signed into law the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which amended the Federal Disaster Relief Act of 1974. Through executive order, FEMA was given authority over the Act, making the agency critical and central to federal response to all presidentially declared disasters. And while the Stafford Act did not specifically distinguish between different hazards, it was through this legal mechanism that the federal government was able to ensure an effective multiagency response to terrorist attacks on American soil that would follow in the years to come. And even today, the Stafford Act is the principal funding mechanism behind the response and recovery to terrorist attacks—and the fact that it is able to be so broadly interpreted as to be so effective in addressing these events speaks to its continuing impact. The Act did state, however, that "In some instances, a disaster or emergency may result in a situation [that] affects the national security of the United States. For those instances, appropriate national security authorities and procedures will be utilized to address the national security requirements of the situation."

Just 3 years later, the Federal Response Plan (FRP) was issued, which laid out the process and structure by which federal assistance, under the Stafford Act, would be coordinated in support of disaster impacted communities.

In Nov. of 1993, Public Law 103-160§1704 was passed stating that FEMA and other federal agencies should perform emergency planning to develop the capability to detect and respond to (1) the potential terrorist use of chemical or biological agents or weapons; and (2) emergencies or natural disasters involving industrial chemicals or the widespread outbreak of disease. In Jun. of 1994, Executive Order 12919 gave FEMA a greater role on the National Security Council on issues of national security resource preparedness, and in Jan. of 1995 the FEMA director established the Office of National Security Coordination,

which reported directly to him.

During this time, the World Trade Center had been bombed, and soon after the sarin gas attack in Tokyo and the Oklahoma City Bombing both took place.

Presidential Decision Directive (PDD) 39

The first notable counterterrorism action impacting emergency management and the management of terrorist incidents occurred on Jun. 21, 1995 was Presidential Decision Directive, or PDD, number 39. This directive stated that the US government would use all appropriate means to deter, defeat, and respond to all terrorist attacks that occurred on US soil, or to US interests, wherever that might be. The action gave the Department of Justice the authority to manage the crisis, while FEMA was given consequence management responsibilities. FEMA was also tasked with chairing a Senior Interagency Group for Training and Preparedness for terrorism events.

The Federal Radiological Emergency Response Plan (FRERP)

In May of 1996, the Federal Radiological Emergency Response Plan (FRERP) was signed into operation. This plan addressed radiological sabotage and terrorism, and was important in that it treated the response to events involving radioactive materials as the same whether intentional or accidental.

The Nunn-Lugar-Domenici Act

As was true with PDD39, the Oklahoma City bombing and the sarin gas attack in the Tokyo subway prompted the drafting and passage of the Nunn-Lugar-Domenici Weapons of Mass Destruction (WMD) Act on Sep. 23, 1996. This act provided much more funding to prepare and equip first responders to manage terrorist attacks. Responder preparedness was noted as being particularly problematic in the sarin gas attack, and many US response organizations recognized that they would be no better equipped to deal with a chemical or other WMD attack in their own jurisdiction.

While the law did promote better response to terrorism incidents, little changes in terms of how attacks were prevented and how terrorist organizations were disrupted occurred. There were still too many different agencies and organizations that dealt with these issues, and none of them were willing to give up their budgets or authorities. At the same time, there were not any pressing reasons to prompt such actions despite that recognition of the need for a more coordinated approach existed.

Terrorism Annex to the Federal Response Plan

The next big statutory event influencing terrorism came in 1997, when the NRF's predecessor, the Federal Response Plan (FRP), was modified to address

the terrorism hazard. Prior to this, nothing in the plan dictated the roles and responsibilities specific to terrorism incidents, so a new Terrorism Incident Annex was developed. The Terrorism Incident Annex was most directly connected to the 1996 bombing at the Olympics in Atlanta, Georgia. In this event, lone-wolf terrorist Eric Rudolph placed and detonated a pipe bomb in the audience. One person was killed and dozens were injured. The fact that this was a domestic terrorist came as a surprise. But what was most troubling about this incident relative to emergency management was that the criminal investigations element of the attack caused several problems in terms of jurisdiction of the attack scene, and who had incident command authority (specifically because the FRP had been activated). The new terrorism annex gave explicit lines of authority for the various federal agencies, and these contributed heavily to the successful interagency coordination of the response to the 9/11 attacks in Virginia and New York (even if problems with interjurisdictional coordination and communication persisted).

The Three Commissions

In the late 1990s, beginning in 1998, a group of three different government commissions were formed to investigate the threat of terrorism and to identify better ways to manage it.

In 1998, President Clinton and Newt Gingrich led the forming of a 14-member panel called the United States Commission on National Security in the 21st Century, or USCNS/21. It became better known as the Hart-Rudman Commission and was created in order to identify better ways for the government to maintain national security. It did this by reviewing vulnerabilities and security needs with a goal of designing a national security strategy.

The Hart-Rudman Commission report, which was titled, "Road Map for National Security: Imperative for Change," was released in Jan. of 2001. It recommended that a new independent National Homeland Security Agency (NHSA) be created, and that this agency would have the responsibility for planning, coordinating, and integrating various US government activities relating to the country's security. The report found that the agency should be structured around FEMA, but should also include the Coast Guard, the Customs Service, and the US Border Patrol. This homeland security agency would ensure that Americans were safe from terrorism and other threats, and would oversee critical infrastructure protection. While no actual structural changes happened before the 9/11 attacks, the research and findings of this commission played strongly into both the form and the function of the Department of Homeland Security that was created in its aftermath.

Two other commissions were established to study the terrorist threat during these years.

The first of these is the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, also known as the Gilmore Commission. This commission produced a series of annual

reports from 1999 until 2003 that informed the risk management from weapons of mass destruction including the scope of actions that would be required to counteract that risk.

The second commission was the National Commission on Terrorism, also known as the Bremer Commission. The Bremer Commission looked at the threat from international terrorism, and evaluated the US laws, policies, and practices that existed to prevent terrorism and to go after those who committed terrorist acts against the country. The commission produced a report in 2000 entitled "Countering the Changing Threat of International Terrorism" which found that international terrorism poses a growing threat, and that more must be done to prevent and prepare for terrorist attacks involving all weapons, but especially WMDs. The recommendations helped considerably in the aftermath of the 9/11 attacks, but without a greater understanding of the scope of the risk that the nation faced at the time, little was done to address the recommendations.

Attorney General's Five Year Interagency Counterterrorism and Technology Crime Plan

In Dec. of 1998 the FBI began coordinating an interagency project, mandated by Congress, to develop an Interagency Counterterrorism and Technology Crime Plan. Through this effort, it was agreed that the FBI held the distinction of being the federal government's principal agency tasked with responding to and investigating acts of terrorism. The point of the project, dubbed the Attorney General's Five Year Interagency Counterterrorism and Technology Crime Plan, was created to ensure more coordination in the fight against terrorists and their organizations, but it was ultimately ineffective in bringing about a high level of information sharing and cooperation that might have otherwise allowed the 9/11 threat to be recognized and stopped.

Amendment of the Stafford Act

In Feb. of 2001, the Preparedness Against Domestic Terrorism Act of 2001 was passed, which amended the Stafford Act to include acts of terrorism within its definition of "major disaster," which formalized how the federal disaster support in terrorism incidents would take place. It also authorized the FEMA Director to be responsible for carrying out federal emergency preparedness plans and programs, and established the President's Council on Domestic Preparedness to eliminate duplication within federal terrorism-preparedness programs.

General Accounting Office Findings

The General Accounting Office (GAO) performed a review in late 2000 and early 2001 to determine whether or not the nation was prepared to manage the level of terror threat that it was believed existed, and their findings were that it

in fact was not. The GAO released a report in Mar. of 2001 related to this effort titled “Combating Terrorism: Comments on Counterterrorism Leadership and National Strategy” which named a number of statutory weaknesses, and argued that without a clearly defined national strategy, the United States would be unable to address the level of terrorism risk that existed. But most importantly, the report stated that there was no one agency that could act as the federal government’s lead agency on the terrorism hazard, and that the many agencies that did address that hazard were very fragmented and poorly coordinated.

In early Sep. of 2001, the GAO released a second report titled “Combating Terrorism: Selected Challenges and Related Recommendations” which stated that the federal government was neither equipped nor prepared to manage a major terrorist threat and attack, and claimed that there was no real critical infrastructure protection in place. The report was eerily prophetic, as within days the 9/11, 2001 attacks occurred and many of the report’s findings were verified.

Executive Order 13228

In the hours and days following 9/11, there was an intense desire to address a threat that was now much more apparent. The president and Congress alike did recognize, however, that time was needed to consider what made the most sense given that knee-jerk legislation could not possibly be informed of the full scope of problems that resulted in the attacks. But also recognizing that the public demanded something be done immediately, President George W. Bush announced 9 days after the attacks the establishment of the Office of Homeland Security within the White House (Executive Order 13228, Oct. 8, 2001). President Bush also created the Homeland Security Council, which was tasked with developing and coordinating an effective strategy to prevent or respond to terrorist threats and attacks.

The USA PATRIOT Act

Just short of 2 weeks following the 9/11 attacks, on Sep. 24, the president announced he would be supporting the passage of an act titled “Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism,” which today is better known by its acronym the PATRIOT Act.

This law was quickly passed with little deliberation, even though it granted powers to investigate suspected terrorism that went far beyond anything that had ever been allowed on such a wide scale, including a significant increase in surveillance and investigative powers. It was signed into law on Oct. 26, 2001. The principal focus of the PATRIOT Act is to provide law enforcement with legal authority to take stronger actions in their collection of information on suspected terrorists, to detain suspected terrorists, to keep suspected terrorists from entering the country, and to tie up terrorist financing. The most important

provisions of this law are that:

- It promotes information sharing between law enforcement and intelligence agencies
 - It makes it illegal to knowingly harbor terrorists
 - It increases the ability of law enforcement officers to tap into suspects' communications, including cell phones and e-mail
 - It allows the federal government greater power to detain non-US citizens suspected of terrorism
 - It greatly increases protection on the border with Canada
 - It increases reporting requirements on international financial transactions
 - It increases or eliminates the statute of limitations on most terrorist attacks
- In Jun. of 2015, several components of the PATRIOT Act expired. However, the passage of the USA Freedom Act one day later reinstated all but one of the expired provisions which related specifically to the mass phone data collection practices of the National Security Agency (NSA) exposed by Edward Snowden.

Homeland Security Presidential Directives

Beginning less than 2 months after the 9/11 attacks, President George W. Bush began to put in place a wide range of counter-terrorism strategies and policies by issuing a long series of Presidential Directives, which his administration called Homeland Security Presidential Directives or HSPDs. The HSPDs were identical in nature to the Clinton administration's PDDs. Bush continued to issue these directives throughout his 8 years in office, and 10 of the most important of these in terms of how they have influenced the management of terrorism and terrorist incidents include:

- HSPD-1: Guided the creation and operation of a Homeland Security Council
- HSPD-3: Created the now defunct five-color coded terrorism risk warning system known as the Homeland Security Advisory System (HSAS)
- HSPD-5: Sought to improve the management of domestic terrorism incidents, and which led to the creation of a National Incident Management System (NIMS)
- HSPD-7: Guided the identification, prioritization, and protection of critical infrastructure
- HSPD-8: Sought to strengthen national preparedness for the response to domestic terrorism events as well as events caused by natural disasters, which also sought to help increase preparedness at the state and local levels
- HSPD-9: Sought to protect the nation's food supplies and agriculture
- HSPD-10: Sought to limit the threat from bioweapons
- HSPD-18: Addressed medical countermeasures for WMDs
- HSPD-19: Sought to limit terrorists' use of explosives
- HSPD-21: Sought to increase public health and medical preparedness

Homeland Security Act of 2002

In the summer of 2002, legislation was finally introduced to establish a

Department of Homeland Security (DHS), and by Nov. of that year the Homeland Security Act of 2002 was signed into law. This law was like few others in terms how comprehensive it was in its changes to the organization of government. The purpose of the law was to try and shore up weaknesses that allowed the 9/11 attacks to occur and to ensure that the response and recovery for terrorist attacks were intimately connected with the efforts to prevent them and prepare for them.

The new DHS was quickly established and given agency-level status. All existing agencies and organizations involved in the response to disasters caused by terrorism, natural hazards, or technological hazards, were moved into DHS at that time. Additionally, all agencies involved in protection of the nation's borders and ports, and immigration and citizenship, were also moved into the DHS. This actually represented a massive organizational change and involved over 230,000 federal employees housed in over 20 agencies. The Act also established the Homeland Security Council in the White House to advise the president on homeland security matters, and the Office for State and Local Coordination and Preparedness, which reported to the DHS secretary (and which is now called the Office of Intergovernmental Affairs).

What the Act did not bring about was the incorporation of the intelligence agencies, including the NSA, CIA, and others, or the investigative agencies, including the FBI. Doing such was the original intent of the legislation but these agencies exerted far too much influence to cede their authority or budgets.

The 9/11 Commission

In Nov. of 2002, Congress established the 9/11 Commission to study the 9/11 attacks to understand how and why they happened, and what needed to be done to prevent them from happening in the future, and also to ensure that the country was able to effectively respond to terrorist attacks that happen. The commission looked at every aspect of the attack, including law enforcement, immigration weaknesses, intelligence failures, the influence of diplomatic relationships, and much more.

In Jul. of 2004, the 9/11 Commission released its final report. The findings included 37 recommendations formulated to prevent future terrorist attacks. These ultimately played into actions taken across all government levels to tighten up weaknesses and to expand response capabilities. The commission's recommendations can be divided into three subject areas:

1. Attacking terrorists and their organizations
2. Preventing the continued growth of Islamist terrorism
3. Protecting and preparing for terrorist attacks

Congress responded to the Commission's report by passing the Intelligence Reform and Terrorism Prevention Act of 2004, which established the Director of National Intelligence, or DNI position, to serve as the lead to the community of intelligence agencies that exist throughout the federal government. It also:

- Provided additional oversight for the intelligence community
- Improved problems related to the transition between presidential

administrations related to security

- Did more to stop financing of terrorist organizations
- Took greater action to prevent terrorists from entering the United States
- Increased transportation security by requiring DHS to develop and implement a National Strategy for Transportation Security and to increase the use of biometrics
- Increased overall port security and critical infrastructure protection
- Directed DHS to develop interoperable communications standards for first response agencies

In Dec. 2005, the 9/11 Commission released a follow-up report that graded the Bush administration and Congress's handling of the Commission's recommendations. The findings, which were issued in the form of a "report card," assigned letter grades to the 41 key recommendations. Of the grades given, five were failures, 11 were "D"s, 9 were "C"s, 13 were "B"s, only one was an "A," while two were incomplete. In early 2007, the new Democratic House presented for their first vote of the session a bill, entitled "Implementing the 9/11 Commission Recommendations Act of 2007" (H.R. 1), that would fund all of the remaining unfulfilled recommendations of the 9/11 Commission. The bill easily passed by a vote of 299 to 128. However, the cost of implementing these remaining recommendations—estimated to be over \$21 billion between 2007 and 2012—drew considerable fire from opponents who claimed the bill's provisions were misguided. However, in Jul. 2007, this bill was passed by the Senate, and President Bush signed it into law on Aug. 3 of that same year.

Information on this legislation can be accessed at <http://bit.ly/28RFQF0>.

The Post-Katrina Emergency Management Reform Act (PKEMRA)

Whether because of the success of the DHS in preventing attacks or because the domestic and international threat levels waned, the United States went through a period of almost 4 years without any successful major terrorist attacks. But on Aug. 29, 2005, Hurricane Katrina struck and brought the topic of natural hazard risk back into focus. Many critics of the government's poor response felt that the shift in policies biased towards terrorism risk prevention, the changes in government emergency management organization, and because of the manner in which emergency management funding streams had been focused so centrally on terrorism prevention and preparedness, together increased the nation's vulnerability to catastrophic natural hazards.

In response, Congress passed the Post-Katrina Emergency Management Reform Act (PKEMRA) on Oct. 4, 2006. PKEMRA established several new DHS leadership positions and changed the organization within the agency such that many functions that had been removed from FEMA were returned. But PKEMRA also specifically excluded certain offices from returning to FEMA and combined them into a National Protection and Programs Directorate, or NPPD, within DHS. This included the Office of Infrastructure Protection, the Office of Cybersecurity and Communications, the Office of Risk Management and

Analysis, and others. And finally, a new office, the Office of Health Affairs, or OHA, was created to manage WMD and biodefense activities and other health-related security issues like responder preparedness for WMD response.

The Effect of Hurricane Katrina on Terrorism Preparedness and Response

Both the government and the public interpreted the lack of preparedness for 9/11 to mean that too little was being done to plan for and protect the nation from the suddenly obvious terrorist threat. The resulting action included a fundamental shift in the focus of emergency management that many considered to be knee-jerk and that included among other changes the restructuring of a significant number of US government agencies and offices and a redrafting of all US emergency operations plans at all levels of government. Many proponents of “all-hazards emergency management” contended that this shift was so great that it would leave the country more vulnerable to the effects of natural disasters than it was before the changes occurred.

After a period of relatively few major disaster events, during which time the nation’s focus on all accounts was the global war against terrorism, the fears of all-hazards proponents were confirmed when Hurricane Katrina (an anticipated and previously exercised natural hazard event) struck on Aug. 29, 2005, and quickly overwhelmed response mechanisms at all government levels. As with all devastating disasters, the subsequent aftermath was rife with finger pointing and wide denials of blame, with the federal government accusing local responders of poor decision making and local and state officials claiming that FEMA ignored their pleas for help. Upon closer examination, however, the general consensus was that FEMA had been diluted too much as an effective response organization within the Department of Homeland Security, much of which came as a result of the terror focus (both programmatically and in relation to the targeting of disaster-preparedness grants) and that major changes would have to be made if such weaknesses were ever to be addressed.

USA Freedom Act

The USA Freedom Act (originally the Uniting and Strengthening America by Fulfilling Rights and Ending Eavesdropping, Dragnet-collection and Online Monitoring Act) was passed on Jun. 2nd of 2015. It was passed primarily to restore the provisions of the USA PATRIOT Act that had expired the previous day, but in a modified form that satisfied criticisms about government powers to eavesdrop, monitor, and otherwise collect information on US citizens. It did, however, restore authorization for roving wiretaps and the tracking of lone wolf terrorists, both of which had been impacted by previous reauthorizations of the USA PATRIOT Act.

The USA Freedom Act was first introduced in Oct. of 2013 after the contractor Edward Snowden leaked classified NSA documents that detailed bulk data

collection programs conducted primarily by the NSA. It did not pass at the time but was re-introduced in the 114th Congress as a way to address concerns and extend USA PATRIOT Act provisions through 2019.

Future Legislation

As the nation continues to grapple with the evolving threat of terrorism, there are several avenues that may be taken in regards to expanding or contracting statutory authorities for prevention, response, and recovery. Clearly, there have been repeat natural disasters to occupy our collective consciousness including Hurricanes Irene and Sandy, the Joplin Tornado, and more. Also influencing legislation is the fact that the Congress, the executive office, and the American public are struggling with federal deficits, and the nature of both post-disaster response and recovery funding, and the grants that have largely supported preparedness and risk reduction efforts for terrorism, are likely to continue shrinking each year as has been the case most recently.

There is persistent talk about, and have been several attempts in pursuit of modifying the Stafford Act in a way that changes eligibility requirements. Those originally tasked with crafting the landmark legislation could not fully appreciate the response and recovery needs that arise in the aftermath of terrorism incidents, especially large-scale events that affect widespread areas of land and large numbers of people. As such, there exists considerable uncertainty about how a weapons of mass destruction incident might be managed by the existing Public Assistance and Individual Assistance programs — and despite considerable planning on the topic there is always a sense of uncertainty about how abatement of damages and reconstruction efforts might or might not be supported in light of the current language of the law.

The United States has traditionally been reactive in both its legislative agenda and its operational footing when it comes to public safety and security risks. As such, the uncertainty about what terrorist attacks might occur has confounded the lawmaking process and a proactive approach appears to remain beyond reach. If history is any judge, tolerance for authorities that infringe upon privacy or restrict rights ebb and flow with the onset of each subsequent event, increasing greatly in the aftermath of each event and decreasing steadily as memory fades. What we do know for certain is that every community, in every state, will be dealing with the management of emergency and disaster events, regardless of whether they are natural, technological, or terrorist in nature, and the authorities by which and frameworks according to which they are able to do that are vital.

Homeland Security Organizations

Homeland Security is the term most commonly used to characterize the government function of preparing for, preventing, responding to, and recovering from terrorist hazards, though this function is closely associated with the emergency management function and in many cases is fully merged. Terrorism alone is typically what people think of in relation to the term, but the actions of the post-9/11 legislation, which inserted FEMA into the Department of Homeland Security at the federal level, grouped the management of all hazards together under one umbrella function. The roots of America's homeland security function, in this manner, include both civil protection and emergency management, and this combination of disciplines is new and still rapidly evolving.

At the federal level, the Department of Homeland Security is a massive agency that has at any given time approximately 230,000-240,000 employees and a budget reaching into the tens of billions of dollars. The agency's organization is complex, and the span of functions performed in pursuit of terrorism risk management is wide. At the state level, the homeland security organization and span of associated functions is much smaller. But it is a role that is highly dependent on the nature of the state's unique terrorism risk as well as the role that the state government played in emergency management prior to the post-9/11 organizational shift. And finally, at the local level the organization has remained largely the same as it was before 9/11 other than in the largest metropolitan areas. It is the expectations placed on responders, on law enforcement, and on emergency planning and management staff with regards to the terrorist threat that has changed.

Local agencies have achieved doing "more with less" across the board, taking on terrorism incident management and all of the associated training, equipment needs, planning, and relationship building that is required in addition to the ongoing need to manage non-terrorist events (often without any additional staff).

Federal grants in the billions of dollars have done quite a bit to support this capacity increase, but this funding is not permanent nor is it always allowed to be used on salaries.

In total, there are more than 87,000 different governmental jurisdictions at the federal, state, and local levels that have responsibilities related to the management of terrorist risk and the incidents that occur.

The Department of Homeland Security

Federal-level organizational structures continue to change with regularity, each time coming in the aftermath of a major disaster event. What we see today in the Department of Homeland Security is the settling of dust on what is likely the endpoint of these efforts. The intent was an effective all-hazards organization that balances the ability to respond to both intentional and natural

or technological events alike. Whether or not that has been achieved is tested with each new disaster. To best understand the nature of the department's organization and how the various offices and divisions relate to each other, it is necessary to look at the DHS Organizational Chart ([Fig. 9.4](#)). Several of these components are described below.

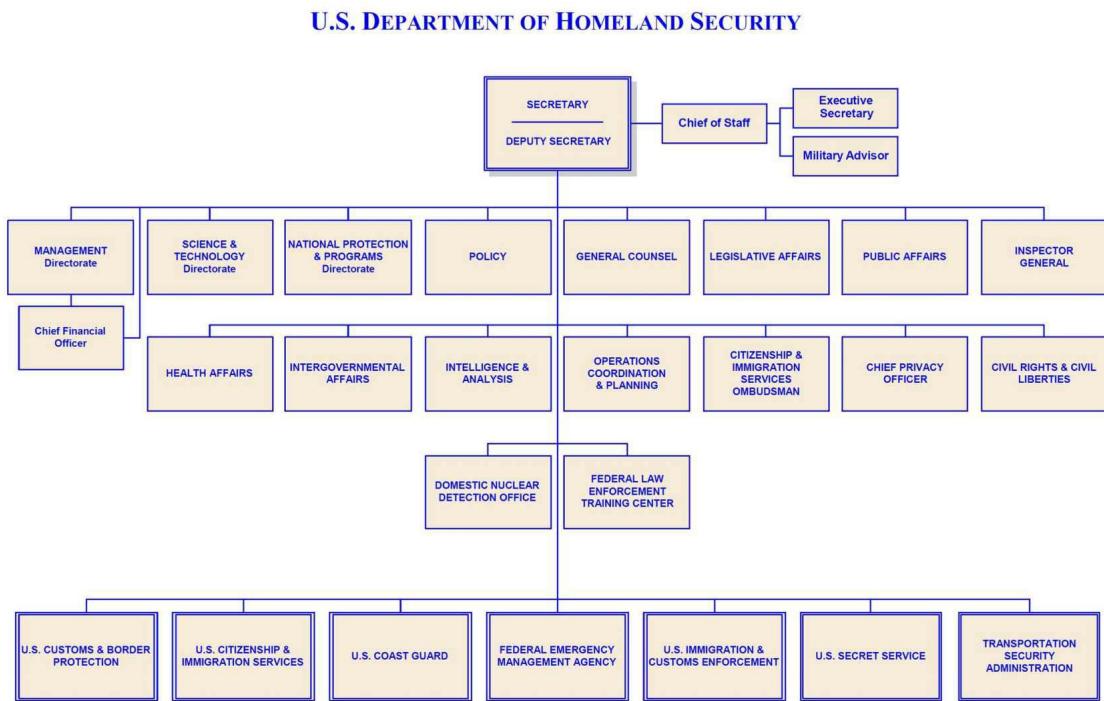


FIGURE 9.4 DHS Organizational Chart. DHS, 2016.

The Office of the Secretary of Homeland Security

DHS is headed by the Secretary of Homeland Security, who has been named a cabinet-level official by both the Bush and the Obama administrations. The Office of the Secretary is responsible for managing the department's overall direction and overseeing its activities. It is also in charge of guiding its budget, which is one of the largest in the federal government. But most importantly, this office sets the direction and priorities for terrorism risk management, and drives the creation of disaster response and recovery initiatives.

Within this office, there are a number of programmatic and issue-related offices that contribute to the overall management of the homeland security mission. These include:

- The Privacy Office, the Office of Civil Rights and Civil Liberties, and the Citizenship and Immigration Ombudsman Office, all three of which ensure that the agency does not overstep its bounds in terms of human rights, civil rights, and civil liberties.
- The Office of the Inspector General which, like all federal Inspector General's offices, keeps a close eye on the agency and its various programs, and makes recommendations for improvement whenever they are needed.
- The Office of Legislative Affairs which helps bridge the connection between DHS and Congress and with the White House.
- Office of General Counsel which provides the necessary legal services to support the management of terrorism and counterterror programs.
- The Office of Public Affairs which works with the media and other methods

of communication to ensure that the public is informed before, during, and after disasters, or if they are simply seeking information about any of the departments' functions.

- The Office of Intergovernmental Affairs which serves as the point of contact between DHS and other federal, state, and local government agencies.
- The Executive Secretariat, which ensures that all DHS officials are included in the correspondence drafting and policymaking process through a managed clearance and control system.
- The Military Advisor's Office, which provides advice to the DHS Secretary and other executive staff whenever Department operations relate to, influence, are influenced by, or otherwise involve the Department of Defense. There are also several advisory panels and committees led by this office in pursuit of terrorism prevention and management. Each of these offices provides subject matter expertise to drive department policy which often leads to national-level policies on the same issues. Their titles are indicative of what they address, and include:
 - The National Infrastructure Advisory Council (NIAC)
 - President's National Security Telecommunications Advisory Committee (NSTAC)
 - Board of Visitors for the National Fire Academy (BOV NFA)
 - Commercial Fishing Safety Advisory Committee (CFSAC)
 - Advisory Committee on Commercial Operations of the Customs and Border Protection (COAC)
 - Expert Panel on Cost Estimating for the Public Assistance Program
 - Great Lakes Pilotage Advisory Committee (GLPAC)
 - Houston/Galveston Navigation Safety Advisory Committee (HOGANSAC)
 - Lower Mississippi River Waterway Safety Advisory Committee (LMRWSAC)
 - Merchant Mariner Medical Advisory Committee (MEDMAC)
 - National Advisory Council (NAC)
 - Navigation Safety Advisory Council (NAVSAC)
 - National Boating Safety Advisory Council (NBSAC)
 - National Maritime Security Advisory Committee (NMSAC)
 - Federal Emergency Management Agency Technical Mapping Advisory Council (TMAC)
 - Towing Safety Advisory Committee (TSAC)
 - US Customs and Border Protection Airport and Seaport Inspections User Fee Advisory Committee
 - US Customs Service COBRA Fees Advisory Committee
 - Aviation Security Advisory Committee (ASAC)
 - Chemical Transportation Advisory Committee (CTAC)
 - Data Privacy and Integrity Advisory Committee (DPIAC)
 - Homeland Security Academic Advisory Council (HSAAC)
 - Homeland Security Advisory Council (HSAC)
 - Homeland Security Information Network Advisory Committee (HSINAC)
 - Homeland Security Science and Technology Advisory Committee (HSSTAC)
 - Merchant Marine Personnel Advisory Committee (MERPAC)

- National Security Telecommunications Advisory Committee (NSTAC)
- National Offshore Safety Advisory Committee (NOSAC)

Pre-Existing Offices Moved Into DHS

The nature of the Homeland Security Act of 2002 helps in understanding the organization structure of the agency because so many of the agencies that were brought into DHS at its forming were brought in intact. Each of these existed elsewhere in the federal government before that time, but their individual missions were found to be related to counterterrorism and national security efforts, and they were brought in to consolidate the mission.

The US Coast Guard: As was true before it was moved, the primary function of the Coast Guard within the DHS is spread across eleven mission areas, which include:

- Ports, waterways, and coastal security
- Drug interdiction
- Aids to navigation
- Search and rescue
- Living marine resources
- Defense readiness
- Marine safety
- Migrant interdiction
- Marine environment protection
- Ice operations
- Other law enforcement

The Coast Guard is still the lead federal agency in charge of maritime safety and security, which includes maintaining the protection of all coasts and waterways from both internal and external threats, which includes terrorism. The Coast Guard is in effect a military force within an executive-level department, and as such it has special capabilities in terms of being able to protect the country from terrorism in a way the other armed forces cannot. The involvement of the Coast Guard in the response to the 9/11 attacks, wherein the Coast Guard readied for possible additional attacks or other response needs, highlighted their important domestic preparedness role. Moving inside DHS actually helped the Coast Guard given that its budget increased, and it has used a significant amount of this money to update its fleet of ships and aircraft.

US Secret Service: The Secret Service has continued its mission of protecting the president and senior executive personnel in its new location, as well as protecting the currency and financial infrastructure and providing security for major national events like the Super Bowl. Each of these remains a major terrorist target, and the loss or attack of any could result in a major national security incident, which is why DHS was seen as a more appropriate home for the Service. The Secret Service also protects many of the facilities that are considered key terrorist targets, like the White House, which the 9/11 planners had indicated to be the target of the fourth hijacked plane that crashed in Pennsylvania. Each of the people, places, and events the Secret Service protects

are thought to be a vital part to the US government functioning or US heritage. Because they are national symbols, they are also high-value terrorist targets.

The Federal Emergency Management Agency: Unlike the Coast Guard and Secret Service, FEMA was not moved into DHS in its original structure at first. Initially, many of the grant-making, preparedness, and training components of FEMA were transferred to other DHS components, but most of these functions were eventually returned. FEMA has always maintained its status as the lead Federal government agency responsible for driving national all-hazards risk management efforts. FEMA maintains a number of programs that drive capacity at the local level through doctrine and guidance, and provide funding for important equipment and planning efforts.

FEMA's mission has remained fairly constant within DHS despite losing its independent agency status. Of course, the DHS mission influences programs within the agency, and many feel that terrorism has been given an unbalanced consideration in comparison to other natural hazards (when considered in light of its actual and estimated relative risk). FEMA administers the Disaster Relief Fund, and it uses it to provide individual and public assistance to help families and communities that are impacted by disasters to rebuild and recover from disasters, including those caused by terrorism. FEMA also has a number of programs that help communities to prevent disasters or reduce the risk from hazards, whether they are natural hazards like floods or terrorism. And finally, FEMA is the lead federal agency in major disaster incidents under the NRF, the NDRF, and NIMS, regardless of origin.

The Federal Law Enforcement Training Center: The Federal Law Enforcement Training Center, or FLETC, is in charge of training federal law enforcement personnel spread throughout 85 different federal government offices. FLETC also trains officers at the state and local levels and provides them with technical assistance in training development when they request it. FLETC has four training sites in Georgia, New Mexico, South Carolina, and Maryland. There are also training sites in Botswana; Thailand, and in various US embassies, which helps move the terrorism readiness mission beyond the country's borders.

Transportation Security Administration: The Transportation Security Administration, or TSA, was created just 2 months after the 9/11 attacks through the Aviation and Transportation Security Act. TSA is tasked with protecting all systems of transportation from terrorist attacks, which includes identifying risks in each of the different sectors, prioritizing them, and managing them to acceptable levels.

New Offices and Directorates

When DHS was created, there were also a number of new offices that were created to manage the terrorism and natural and technological hazards risks. These offices have changed in number, form, and function over the years as components have been moved in and out of the different DHS offices, especially FEMA. At present, DHS has three major multifunctional divisions, which have

been termed directorates. One of these is focused on the management of agency operations, while the other two maintain critical homeland security roles. Each is led by a DHS undersecretary. The directorates include:

Directorate for National Protection and Programs: This directorate was created to reduce all-hazards risk in the United States. It was created in 2007 as a result of PKEMRA, and has two main purposes:

- To strengthen national risk management efforts for critical infrastructure.
- To define and synchronize DHS-level homeland security protection doctrine among all important stakeholders, including all government bodies, the private sector, and the NGO community.

NPPD is something of a DHS “focal point” for risk-reduction policies, and its responsibilities include:

- Identifying and mitigating cyberattack threats
- Protecting and strengthening national security and emergency communications capabilities
- Integrating and disseminating critical infrastructure and key resources threat, consequence, and vulnerability information and developing risk mitigation strategies
- Reducing threats posed against the 9000 federal facilities nationwide
- Providing biometric and biographic identity management and screening services
- Leading DHS’s efforts to develop, implement, and share a common homeland security risk management framework

NPPD performs its mission through the actions of five offices. These are the:

- Office of Cybersecurity and Communications (CS&C)
- Office of Infrastructure Protection (IP)
- Federal Protective Service (FPS)
- Office of Cyber and Infrastructure Analysis (OCIA)
- Office of Biometric Identity Management (OBIM)

Directorate for Science and Technology: S&T was created to fund, lead, and implement research and development of technologies and systems used to ensure national security. This includes, among many other things, the prevention of terrorists being able to bring chemical, biological, radiological, nuclear, and related weapons and material in the United States. S&T products are also developed to help with terrorism prevention in the United States, and response when attacks happen. This kind of research was conducted prior to 9/11, but to a much lower level of action and within the Department of Justice National Institute of Justice. S&T has four different divisions through which research and development takes place. Three of these in particular produce products that trickle down to the local level, and are:

- The First Responders Group (FRG), which identifies the needs of first responders and ties those needs to research.
- The Homeland Security Advanced Research Projects Agency (HSARPA), which works on highly innovative programs geared towards the country's future counterterrorism needs. HSARPA divisions include:
 - Borders and Maritime Security Division

- Chemical/Biological Defense Division
- Cyber Security Division
- Explosives Division
- Resilient Systems Division
- The Research and Development Partnerships, which manages the national research laboratories and works closely with universities and the private sector.

Other DHS Offices

DHS also helps to manage the terrorist hazard through a number of offices focused on protecting the sovereign borders of the United States and tightening up immigration and customs enforcement.

- **US Citizenship and Immigration Services:** USCIS facilitates the immigration process for people who wish to enter the country according to the established immigration laws, whether to work or live. Terrorists have been known to exploit US immigration laws, and this office acts as something of a firewall that permits legal immigration while filtering out potential terrorists or criminals.
- **US Customs and Border Protection:** CBP is in charge of protecting the country's international borders, at each of the official ports of entry, and in between them on the land and at sea. Part of this CBP mandate is to search cargo and people for the purpose of preventing the smuggling of WMDs, agriculture, animals, and other things that could cause a national security risk or an economic disaster. They also inspect traveler and immigration documents at entry points and send back those individuals who do not have the correct permission to enter. CBP officials work primarily in the United States, but are also deployed overseas at major international seaports through the Container Security Initiative, or CSI. The CSI program was created to allow inspection to occur earlier in the transport process to help prevent illegal and dangerous materials from ever entering the nation's ports in the first place. A total of 58 CSI ports around the world currently cover about 80% of all inbound containers. CBP officers have the authority to inspect travelers and cargo that do enter the United States to make sure that each enters legally and don't pose a threat to the country in any way. In doing this, CBP officers make direct contact with more than 360 million people that cross the border each year, as well as tens of thousands of shippers, drivers, pilots, and importers.
- **US Immigration and Customs Enforcement (ICE):** ICE is in charge of enforcing US immigration and customs laws. ICE plays an important role in terrorism protection by identifying and dismantling criminal organizations that illegally cross the border, or by identifying, apprehending, and deporting dangerous illegal aliens. The ICE organizational divisions that directly address the terrorism threat are Enforcement and Removal Operations (ERO) and Homeland Security Investigations (HSI).

The **Office of Health Affairs** (OHA) coordinates the preparation for and

response to incidents that have a medical- or health-related component, whether because of epidemic potential or because a bio- or chemical-terrorist weapon is threatened or used. During the 2014 Ebola epidemic, this office was integral to new screening policies at ports of entry that sought to limit the introduction of the virus by checking the health of those arriving from designated high-risk countries. This office also leads DHS efforts to ensure that the country is able to manage medical and food needs of the affected population during catastrophic disasters. The Health Threats Resilience Division of OHA is specifically charged with preparing for the terrorist aspects of the office's mission.

Because nuclear and radiological threats pose such great consequence risk, DHS maintains a *Domestic Nuclear Detection Office* that is in charge of efforts to detect any illegal or terrorist-related attempts to import, possess, store, develop, or transport nuclear or radiological material for use against the country, and to help provide guidance for the planning required to manage an incident if there is ever an attack using this material.

Critical Thinking

Do you think that the Department of Homeland Security can ever have a true risk-based all-hazards focus, or will its focus always be terrorism? Explain your answer.

Another Voice

The Problem of FEMA In DHS

In 2009, the Department of Homeland Security Office of the Inspector General released a report titled "FEMA: In or Out?" that tackled the questions surrounding whether FEMA should be a stand-alone agency or remain a component of DHS (OIG-09-25). The findings of this report do not take a stance on the answer to this question, but they do claim to give consideration to both sides of the argument surrounding this issue. However, this internal report clearly takes a strong stance that favors FEMA's steadfast inclusion within DHS, which stands to incredibly benefit the agency (due to FEMA's virtually limitless budget under the provisions of the Stafford Act). This report is far from being impartial, and moreover, it heavily downplays the arguments in favor of FEMA's reinstatement as an independent, cabinet-level agency. The following excerpt is an adaptation of the language found in this report.

Arguments for and Against Keeping FEMA in DHS

Despite generally positive reviews of FEMA's performance in the most recent disasters, calls to return FEMA to its independent-agency status arise periodically. The arguments for such proposals are discussed below, but before addressing them, consider the following arguments that are raised for keeping FEMA within the umbrella of DHS. These include the nation's current

vulnerability to terrorism, the synergy and resources FEMA enjoys as part of DHS, and the importance of reducing stovepiping of the preparedness and response functions.

Presidents Bill Clinton and George W. Bush, and UK prime minister, Gordon Brown, each faced a major terrorist attack in their respective countries during their first year in office. Experts often contend that nations face an increased risk of terrorism during the first year of a new leader's tenure. In Nov. 2008, shortly before the presidential election, Director of National Intelligence Mike McConnell told intelligence officials that the new administration might be tested by a terrorist attack during its first year citing, "the World Trade Center was attacked in the first year of President Clinton, and the second attack was in the first year of President Bush." President-elect Barack Obama made a statement to this effect during a recent interview, saying that it was "important to get a national security team in place, because transition periods are potentially times of vulnerability to a terrorist attack," and Vice President-elect Joe Biden warned that "it will not be 6 months before the world tests Barack Obama like they did John Kennedy."

Prediction of terrorist attacks is extremely difficult and the assumption of new leadership is just one of many factors that influence terrorism risk in the United States as the new administration takes office in 2017. Given that there is a general elevated risk of terrorism due to rising global instability (chiefly a result of conflict in the Middle East and the global influence of ISIL), policymakers must again consider whether it is an appropriate time to introduce upheaval into the nations homeland security apparatus. It is critical to note that talk of extracting FEMA from DHS generally focuses on the perceived benefits to FEMA—something for which not all sides agree. What is less commonly raised in debate are the effects FEMA's removal might have for the department.

Consider that many of the support functions that comprise the DHS organization have become increasingly interwoven since 2003. A major reorganization would impact not only FEMA, which would have to reconstitute itself as a stand-alone agency, but also wider DHS structure, which would have to adjust to losing a central component. Don Kettl warns that "FEMA has gone through a long and wrenching series of reorganizations ... Change for the sake of change could simply induce organizational whiplash and further destabilize an already unstable organization." John Harrald warns that pulling FEMA out of DHS would mean a difficult transition period and the rewriting of doctrine and the redesign of systems, "but natural hazards and terrorists are not going to wait for us to reorganize yet again."

Synergy and Resources

A primary benefit to FEMA of being part of the 230,000-plus person Department of Homeland Security is the wealth of resources available to FEMA through other DHS components. These connections create synergies that were never available to FEMA as a stand-alone agency. In DHS, FEMA is coupled with components that have far-reaching responsibilities and

capabilities, including search and rescue, communications, law enforcement, intelligence, and infrastructure protection.

The Government Accountability Office (GAO) has cited areas of interconnectedness, including grants, through which Urban Area Security Initiative and State Homeland Security Program funding can be used for mass evacuation planning; interoperable communications; DHS Science & Technology expertise for the Equipment Standards Program; and a huge surge capacity of personnel that can be tapped in case of a disaster.

Former DHS secretary Michael Chertoff once said that “until this department was formed, interagency planning on the civilian side was not a well-executed responsibility.” In contrast, Admiral Thad Allen testified in 2006 that since the DHS’s creation, the relationship between the Coast Guard and FEMA has been greatly strengthened. Prior to the establishment of the DHS, Coast Guard and FEMA interaction was infrequent. By 2006, the number of joint exercises had increased 354%, from 13 in the years 1999 to 2002 to 59 in the years 2003 to 2006.

Chertoff has also stated that “the fact that FEMA and other components of DHS have had an opportunity during times of rest to plan, train, and exercise together and to build capabilities that are capable of crossing jurisdictional lines has allowed us to have the kind of capabilities to support an emergency that would not be the case if we were in different departments.” Those joint capabilities were evidenced in recent disasters.

In the wake of Hurricane Katrina, the Coast Guard, the Transportation Security Administration (TSA), US Customs and Border Protection (CBP), US Immigration and Customs Enforcement (ICE), and the Secret Service were all vital to the response that unfolded. In responding to Hurricanes Gustav and Ike, “FEMA was supported by all of the elements and all the powers of the Department of Homeland Security.” CBP provided security for the transit of life-sustaining goods and provided aerial assets that allowed surveying of damage. In the past, FEMA relied on DOD for aerial surveillance, which cost considerably more than using CBP. TSA supported 20 FEMA commodity distribution locations, augmenting FEMA staff with 366 additional employees in the field. The Coast Guard performed land, maritime, and air search-and-rescue missions. Then-Secretary Chertoff argued that when “it’s necessary to quickly call upon other agencies, the quickest way to do that is not by reaching to another department of government, … but it’s to have the ability of the Secretary to immediately order assistance to be rendered in all of the elements and capabilities of the entire Department of Homeland Security.”

Finally, it is important to discuss DHS grants and their importance to the emergency management community. When FEMA initially joined DHS, many of its grants functions were transferred to other parts of DHS. Since Hurricane Katrina, FEMA administers almost all DHS grants, both those focused on natural hazards and those focused on terrorism.

Pulling FEMA out of DHS would almost certainly disrupt the grants function in the short term, and it could result in once again separating out “emergency management” grants from “terrorism” grants, which experience

has shown to be inefficient, duplicative, and wasteful. The synergies that have been realized in homeland security grants should be an important consideration when debating the merits of removing FEMA from DHS.

Preparedness and Response

The well-recognized cycle of emergency management includes preparedness, response, recovery, and mitigation. This is true of all emergency management, whether for natural or manmade hazards. It is helpful to think of these elements as a four-legged stool. Remove one of the elements, and the stool becomes unstable. Some would suggest that we need two stools: one labeled crisis management and one labeled consequence management.

Practice has shown that such divided structures simply do not function well or even as intended, given that there is not a clean break between the two (nor is the “cycle” really a temporal construct as all four functions typically occur concurrently). There existed significant stovepiping of functions prior to the creation of DHS simply as a factor of how emergency management had evolved from civil defense and other aspects of public safety and security. Then-Secretary Chertoff addressed this debate in stating that “the core of the argument made about FEMA is that somehow FEMA is involved with consequence management, dealing with the response, and DHS, in other respects, is dealing with preventing or protecting against a response and that if these are different functions, that therefore they ought to be under different roofs, and I really beg to differ with that. I think that is a profound misunderstanding of how one plans and prepares and executes in the face of a possible emergency and an actual emergency because the truth is emergencies don’t come neatly packaged in stovepipes and if there’s any lesson we’ve learned in dealing with terrorism or dealing with any other crisis, it is that stovepiping is the enemy of efficient and effective response.”

The Hart-Rudman Commission report states, “The current distinction between crisis management and consequence management is neither sustainable nor wise. The duplicative command arrangements that have been fostered by this division are prone to confusion and delay.” The report authors added that this duplication wastes time, energy, and resources. Preparedness and response are fundamental to homeland security. If FEMA is removed, a duplicate agency would most certainly be created in DHS, because preparedness and response are so fundamental to the DHS mission and as such it could not operate effectively without them.

Finally, Kettl suggests that for local frontline first responders, there is no line between terrorist and non-terrorist hazards; first responders must focus on all-hazards-plus. The federal approach and structure should match the local approach. “Separation would create deep fissures between national policy and the realities of local response.”

Goldwater-Nichols Act of 1986

It is worth mentioning, in the context of merging entities and the growing pains that can result, the Goldwater-Nichols Act of 1986 (P.L. 99-433), which

increased integration among the armed services. Like most “independent” agencies, the defense agencies did not want to be integrated initially, but over time, the arrangement has created a stronger DOD. The defense components did not want their individual roles and authorities to be diminished, and they resisted integration for years. The Desert One episode—the failed attempt to rescue the hostages in Iran during the Carter administration—was the final straw in this arrangement. This failure prompted passage of the Goldwater-Nichols Act.

Just as passage of the Homeland Security Act did not automatically bring jointness to homeland security functions, neither did the Goldwater-Nichols Act immediately solve the challenges in the military. According to Wormuth, “The Department of Defense took more than 40 years to evolve from the War Department into the Defense Department and then another 20 years after passage of the 1986 Goldwater-Nichols Act to mature into the integrated agency of today.”

Arguments for Making FEMA a Stand-Alone Agency

Arguments among emergency managers and others in government calling for FEMA to be removed from DHS reached a crescendo in 2009 when the Obama administration was taking hold. In Nov. 2008, the US Council of the International Association of Emergency Managers (IAEM-USA) had formally adopted the position that FEMA’s independent agency status should be restored with the agency reporting directly to the president. The organization further urged that the FEMA director be included as a member of the president’s cabinet.

Kettl suggested that calls for FEMA’s removal might have been based on a faulty premise: that [former FEMA Director] James Lee Witt transformed the troubled agency and made it successful. And in line with this thinking, because FEMA was independent under Witt, it should be restored to independent status. Kettl points out, however, that FEMA did not always perform well in the past, even when it was an independent agency.

FEMA was an independent agency when it was roundly criticized for its response to Hurricane Andrew in 1992. Problems were also recognized during the TOPOFF 2000 exercise—again, while FEMA was an independent agency.

“When viewed against the history of emergency management, the success FEMA enjoyed in the 1990s was the exception, not the rule,” Roberts states. Kettl suggests that under Witt, “success in managing FEMA flowed from the leader’s ability to lead … Restructuring cannot *substitute* for leadership.” In 2006, David Walker, then-comptroller general of the United States, said, “There are pros and cons to keeping FEMA in or out, but the quality of leadership … and the quantity of resources has more to do with the success of the agency.”

Calls for an Independent FEMA, With Cabinet-Level Status and a Direct Line to the President

Those who would like to see FEMA removed from DHS are calling for three basic elements: (1) independent agency status, (2) including the FEMA

administrator in the president's cabinet, and (3) giving the FEMA administrator a direct line to the president. Addressing the third element first, the FEMA administrator already has a direct line to the president during a disaster. Congress recognized this shortcoming in the aftermath of Hurricane Katrina and legislated this relationship in the Post-Katrina Reform Act. The GAO recently found that the FEMA administrator does give advice directly to the president during meetings.

It is important to note that one's having a direct line to the president does not necessarily mean they have the president's ear. Witt certainly had President Clinton's ear, but this more likely stemmed from his personal relationship with the president than from his status as FEMA director. The Post-Katrina Reform Act "assures that there will be direct access, but it cannot assure that the relationship with the president will be strong or that the administrator will have the president's confidence."

Including the FEMA director in the cabinet is a decision that cannot be legislated. While not defined in law, the cabinet traditionally includes the vice president and the heads of 15 executive departments. The president has the discretion to accord cabinet-level rank to other officials. Currently, in addition to the heads of the 15 executive departments, cabinet-level status has been given to the White House chief of staff, the director of OMB, the US trade representative, the administrator of the Environmental Protection Agency, and the director of the Office of National Drug Control Policy. Executives who do not currently have cabinet-level status include the director of the Central Intelligence Agency, the administrator of the Small Business Administration, and the administrator of the National Aeronautics and Space Administration.

Granting FEMA independent agency status, which is the third point of this argument, could arguably be accomplished legislatively or by Executive Order. But this arrangement will not necessarily solve FEMA's problems or address the concerns of those who would like to see FEMA removed from the Department of Homeland Security. As just evidenced, FEMA often performed poorly even when it was an independent agency. According to Kettl, "Structure matters. But leadership counts far more."

Other Agencies Participating in Community-Level Funding

DHS is the agency that is most obviously focused on national security and terrorism prevention, and has the most central role in its implementation, but it is by no means alone in this mission at the federal level. There are a number of other federal agencies that address one or more specific aspects of terrorism prevention and/or management, or that fund and support the homeland security efforts of state and local governments. While the following list is by no means exhaustive, these agencies play the most significant role in managing terrorism risk.

The White House

Of course, the White House, as the head of the executive office under which all federal agencies fall, leads the overall policy and strategy direction, and the president as commander-in-chief makes all important decisions relative to both through the National Security Staff (NSS). The NSS supports all White House policymaking activities related to international, transnational, and homeland security matters. This office is where the highest level conversations on national security issues, which include terrorism, WMDs, and natural disasters, amongst others, happen.

US Department of Agriculture

The safety of the food supply is a national security issue, and terrorists have used the food and water supplies as intended and actual targets in the past. Attacking food at the least could erode international trust in the US food supply and cause a major economic impact, or at worst could lead to the sickening or killing of a great amount of people. USDA has a Homeland Security Council that works on three issues related to terrorism:

- Safety and security of the food supply and agricultural production
- Protection of USDA facilities
- Emergency preparedness of USDA staff

There are a number of USDA divisions that handle different aspects of inspection and monitoring.

When actual events happen, it is the USDA Food Safety and Inspection Service (FSIS) that develops and coordinates all activities of the USDA to prevent, prepare for, respond to, and recover from non-routine emergencies resulting from both intentional and unintentional meat and poultry contamination. In the event of an attack, the USDA has the lab capabilities to test for “nontraditional” biological, chemical, and radiological agents. Through the USDA Office of Food Security and Emergency Preparedness, it helps laboratories throughout the country do the same by providing guidance,

funding, and other program support.

Law enforcement officers of the Forest Service, which is also part of the USDA, conduct security assessments of research facilities and air tanker bases nationwide, and other very high value terrorist targets on government property like dams, reservoirs, pipelines, water treatment plants, power lines, and energy production facilities.

Department of Commerce

The Department of Commerce plays a key role in homeland security through three of its offices:

- The Bureau of Industry and Security
- The National Institute for Standards and Technology
- The National Oceanographic and Atmospheric Administration

The Bureau of Industry and Security (BIS), contributes to national security by making sure that sensitive goods and technologies do not get into the hand of terrorists or hostile countries. The National Institute for Standards and Technology (NIST) develops infrastructure protection standards, and supports the development of technologies that can identify terror attempts such as biometric identification systems and radiation detection. And finally, the National Oceanographic and Atmospheric Administration (NOAA), while not focused on terrorism, is able to provide warnings in the event of a terrorist attack involving WMDs using the weather radio system that has been used for decades to quickly warn and inform large populations that are at high risk.

The Environmental Protection Agency

The Environmental Protection Agency (EPA) plays a major role in terrorism preparedness and response due to their mandate to monitor air and water quality. Attacks using WMDs can involve the release or threatened release of dangerous or poisonous chemicals into the atmosphere, and the EPA is able to help communities to prevent, prepare for, and respond to them.

Because of its inherent role in protecting human health and the environment from possible harmful effects of certain chemical, biological, and nuclear materials, the EPA is actively involved in counterterrorism planning and response efforts, and supports these efforts by:

- Helping state and local responders to plan for emergencies
- Coordinating with key federal partners
- Training first responders
- Providing resources in the event of a terrorist incident

The Department of Justice

The Department of Justice (DOJ) has the lead responsibility for criminal investigations of terrorist acts or threats when they take place inside the United States or are directed at US citizens or institutions abroad. The department is a

key homeland security player due to the fact that its agents and operatives help to prevent terrorist attacks and then capture those responsible for carrying out attacks that succeed. After an attack or threat, the DOJ efforts focus on identifying the perpetrators, catching them, and bringing them to justice. The DOJ has several agencies involved in these efforts: The Federal Bureau of Investigation (FBI) is in charge of the forensics collection at the attack scene and elsewhere, and any investigations that take place. The Drug Enforcement Administration (DEA) becomes involved when terrorists are using the sale of drugs to finance their operations. And the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) is involved when the terrorists' operations involve firearms or explosive weapons.

The Department of State

The State Department, which makes and promotes the country's foreign policy and coordinates with foreign governments, among other functions, works to secure assistance in dismantling overseas terrorist organizations and in preventing them from reaching our borders. State department political officers work with local contacts to monitor terrorist threats and work with foreign intelligence agencies and governments to ensure that the US government is highly aware of any impending threats.

The Department of Defense

The Department of Defense (DOD) plays a key role in preventing terrorist attacks in the United States and against Americans overseas by first serving as a military deterrent to nations and groups who might otherwise consider launching an attack or harboring those who do, and by taking military actions against terrorist threats that exist overseas. DOD assistance in resolving global conflicts also contributes to national security by decreasing the lawless and rogue state conditions that allow terrorist organizations to thrive. Domestically, DOD only participates in disaster response at the direction of the secretary of defense or the president, and only when the response capabilities of state and local authorities are overwhelmed and no other agency can manage the need. Military forces also pursue and attack terrorists and terrorist organizations operating outside the borders of the United States. The Department of Defense only became directly involved in the Conflict in Syria when it was feared that the Islamic State in Syria and the Levant (ISIL, also called ISIS) might try to attack the United States or American interests abroad. And it was the US Military that conducted the strike that killed Osama bin Laden in Pakistan once the CIA determined his whereabouts.

The National Guard is the one military force that regularly responds to homeland security and disaster incidents in the United States. Although the National Guard falls under the command of the Secretary of Defense, but there are 54 different National Guard organizations representative of the 50 states, the District of Columbia, Guam, the US Virgin Islands, and Puerto Rico. National

Guard Forces are attached to their state or territorial unit and fall under the command of an adjutant general. They can be mobilized into service for either state or federal duty, and are often on the front lines of disaster response given that they are the chief resource for the state government in such incidents.

While it is common to see National Guard troops present during responses to disasters, terrorist attacks, or other incidents and events that impact national security (e.g., the Boston Marathon Bombings), it is not common to see national-level military forces (e.g., the Army, Air Force, Navy, or Marines). The 2006 Military Commissions Act provided the President with increased authority to utilize the US Military for domestic operations in times of disaster, though this has not been required to any significant degree even during events like Hurricanes Katrina and Sandy. Additionally, per the Posse Comitatus Act the US Military can only provide domestic support, and cannot perform any law enforcement functions. Additionally, it must be determined that local, state, and federal resources are together unable to meet response or recovery requirements before these forces are called upon. The Northern Command of the US Military, created in 2002 and headquartered in Colorado Springs, CO, was given the territory that encompasses Canada, the United States, Mexico, the Bahamas, and parts of the Caribbean. Forces operating under this command would respond to a domestic incident if the Department of Defense was tasked with response. As such, Northern Command is actively involved in intelligence sharing and communication with domestic homeland security agencies, and its units participate in many US-based exercises.

The Department of Health and Human Services

The Department of Health and Human Services (HHS) leads the coordination of all functions relevant to Public Health Emergency Preparedness and Disaster Medical Response, including preparedness to manage these events. As coordinator and primary agency for the NRF Emergency Support Function #8, Public Health and Medical Services, HHS coordinates support from all levels to address these health and medical issues, which are likely to be central to any terrorist attack involving WMDs. Through the office of the Assistant Secretary for Preparedness and Response (ASPR), HHS leads the federal government effort to prevent, respond to, and recover from all events that involve a public health component, including terrorism. Given the all-hazards role of DHS, it is important to note that this agency also considers natural hazard response, given that there is often a public health component of them as well. However, it is the Centers for Disease Control and Prevention (CDC) that is the agency's most recognizable homeland security-focused office. CDC monitors and responds to disease outbreaks throughout the world, and provides epidemic control support both domestically and abroad. One of the most important roles of the CDC is to prepare local and state public health departments for new and emerging threats, such as was required to respond to the worldwide Ebola outbreak that began in early 2014.

The Department of the Treasury

The Department of the Treasury both prepares for and responds to attacks that impact the nation's financial systems and goes after terrorists by freezing their ability to finance their efforts. After 9/11, the treasury initiated the Terrorist Finance Tracking Program (TFTP) to support efforts against terror financing.

Homeland Security Activity of State and Tribal Governments

At the state level, each governor holds a considerable amount of responsibility to ensure that national security is being maintained and power to take action to support local jurisdictions if a terrorist attack ever happens. The role of the governor in a terrorism-event response is very similar to that as is performed in natural disaster response. The governor promotes the development of a hazard-risk assessment and vulnerability analysis to all hazards and considers what might be done to reduce or eliminate those risks.

State governments and their resources also represent vulnerabilities. The state maintains quite a bit of critical infrastructure, all of which is considered exposed to terrorism, and the state government itself is a potential terrorist target.

As for jurisdiction of the law enforcement aspect of terrorist attacks, the state government defers to the FBI and other federal agencies (including DHS). If the Secretary of Homeland Security so chooses, DHS also assumes the incident command of the consequence management of response as well which is more a matter of local government response, but certainly impacts the nature of the state's support. The governors have at their disposal both law enforcement resources in the state police force and a diverse response resource in the National Guard. During actual disaster events, states must often mobilize their various response resources as stipulated in the state emergency plan, and help to coordinate federal and other resources as they are provided. States play an important role in managing many of the federal grant programs that are used to prevent and prepare for terrorist attacks and in managing information dissemination relative to threat information.

Following a terror attack, the governor may take on a number of different roles, such as serving as the principal source of information to the public, especially if there is panic, if decontamination or quarantine is required, or if there is going to be an evacuation. Although the governor is always responsible for determining whether or not a disaster declaration is needed—and for making that declaration—given the jurisdiction of the FBI over terrorist attacks, a federal response is all but guaranteed, at least in terms of the law enforcement aspects of the event. And if there are WMDs involved, it is also fairly certain that there will be an emergency declaration to facilitate and formalize the involvement of the other federal agencies which, by law, can only provide assistance if such a declaration is made.

Tribal leaders are very similar to governors in terms of their responsibilities relative to terrorism prevention, preparedness, response, and recovery. They

can serve as both key decision-makers and trusted sources of public information during incidents. Tribal governments, which have a special status under federal laws and treaties, ensure the provision of essential services to members within their communities and are responsible for developing emergency response and mitigation plans. Tribal governments may coordinate resources and capabilities with neighboring jurisdictions, and establish mutual aid agreements with other tribal governments, local jurisdictions, and state governments. Depending on location, land base, and resources, tribal governments provide law enforcement, fire, and emergency services, as well as public safety to their members.

All states maintain offices of emergency management and homeland security, and in most states these are combined in recognition of the federal structure. Following the attacks of 9/11, the governors designated individuals from various backgrounds in state government to serve as their state homeland security directors. Among the states and territories there is no common model; however, in several states, the homeland security director serves as an advisor to the governor in addition to coordinating state emergency management, law enforcement, health, and related public safety functions. In other models, governors designated the state's adjutant general as homeland security advisor. Although governors generally have opted not to create unique cabinet-level positions with oversight over all state agencies, they did form homeland security task forces. The task forces typically consist of executive office staff and agency heads from law enforcement, fire and rescue, public health, the National Guard, transportation, public works, and information technology. Where the governor places the official in charge of homeland security differs state by state, but across the 50 states and the District of Columbia, these offices exist in ([NGA, 2014](#)):

- A standalone Office of Homeland Security (12 states—AZ, AR, DE, DC, HI, IL, IN, IA, KY, NY, OK, RI)
- Within the State Office of Emergency Management (5 States—CT, GA, NE, NJ, ND)
- In the state's military office under the direction of the adjutant general (9 states—AK, ID, KS, ME, MT, OR, WA, WV, WI)
- In the public safety or law enforcement office (19 states—AL, CO, FL, MA, MI, MN, MS, MO, NV, NH, NC, OH, PA, SC, SD, TN, TX, UT, VT)
- Within the executive office of the governor (6 states—CA, LA, MD, NM, VA, WY)

In Aug. 2002, the NGA Center for Best Practices of the National Governors Association released "States' Homeland Security Priorities." A list of ten "major priorities and issues" was identified by the NGA Center through a survey of states' and territories' homeland security offices ([NGA Center for Best Practices, 2002](#)). Fifteen years later, these same priorities still apply, despite the major events that have occurred in that time:

- Coordination must involve all levels of government
- The federal government must disseminate timely intelligence information to the states

- States must work with local governments to develop interoperable communications between first responders and adequate wireless spectrum must be set aside to do the job
- State and local governments need help and technical assistance to identify and protect critical infrastructure
- Both the states and federal government must focus on enhancing bioterrorism preparedness and rebuilding the nation's public health system to address 21st century threats
- The federal government should provide adequate federal funding and support to ensure that homeland security needs are met
- The federal government should work with states to protect sensitive security information, including restricting access to information available through "freedom of information" requests
- An effective system must be developed that secures points of entry at borders, airports, and seaports without placing an undue burden on commerce
- The National Guard has proven itself to be an effective force during emergencies and crises. The mission of the National Guard should remain flexible, and Guard units should remain primarily under the control of the governor during times of crises
- Federal agencies should integrate their command systems into existing state and local incident command systems (ICS) rather than requiring state and local agencies to adapt to federal command systems

Local Government Homeland Security Activities

The United States' federal system of governance is designed to protect the states' ability to pass their own laws and thus govern independently as determined by the residents of each state. Within this system, the authority to manage disaster incidents has been further passed down to the most local levels as authorized by Dillon's Rule or Home Rule, at either the county (or Parish) or municipal levels. And these same local governments are tasked with making the decisions and the plans to reduce disaster risks within their boundaries, and ensuring that the laws and ordinances related to risk reduction—including terrorism risk reduction—are followed (this is true in all cases except where state or federal authorities have jurisdiction, which represents a small percentage of land and is typically limited to federal buildings, land, air, and seaports, military installations, and other national infrastructure).

Dillon's Rule and Home Rule

Dillon's Rule is derived from the two court decisions issued by Judge John F. Dillon of Iowa in 1868. It affirms the previously held, narrow interpretation of a local government's authority, in which a sub-state government may engage in an activity only if it is specifically sanctioned by the state government. It states that:

Each state differs with regard to the powers granted to the local level.

That being said, the NLC notes that according to Dillon's Rule, if there exists reasonable doubt about whether or not some power or authority has been conferred to a local government, then the power or authority has not been conferred.

Thirty-nine states employ Dillon's Rule to all municipalities. These include: Alabama (counties only), Arizona, Arkansas, California (except charter cities), Connecticut, Delaware, Florida (with conflicting statutes), Georgia, Hawaii, Idaho, Illinois, Indiana (townships only), Kansas (not for cities and counties), Kentucky, Louisiana (only pre-1974 charter municipalities), Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Tennessee (some communities), Texas, Vermont, Virginia, West Virginia, Washington, West Virginia, Wisconsin and Wyoming.

The second is in accordance with Home Rule. Consider the following description provided by the National League of Cities:

The ability of local governments to respond effectively to local conditions in the late 1800s was severely limited by Dillon's Rule; no local action could be undertaken without permission from the state legislature, which only met for short, biennial sessions.

As such, Dillon's Rule generally requires that local officials spend a considerable amount of time lobbying the state legislature to approve bills granting local authority and disapprove bills imposing restrictions on them.

The inflexibility of this system is the reason that many states began to adopt "home rule" provisions in the early 1900s that conferred greater authority to their local governments.

Home rule is a delegation of power from the state to its sub-units of governments (including counties, municipalities, towns or townships or villages). That power is limited to specific fields, and subject to constant judicial interpretation, but home rule creates local autonomy and limits the degree of state interference in local affairs.

The powers and limits of home rule authority for local governments are defined state-by-state. State provisions for home rule can be defined by each state's constitution and/or statutes enacted by its legislature. Not all cities make use of the discretionary powers of home rule that are provided by their charter. Functional powers are the most frequently used and expanded.
(NLC, 2015)

There are ten states that employ home rule. They include: Alaska, Iowa,

Massachusetts, Montana, New Jersey, New Mexico, Ohio, Oregon, South Carolina and Utah (Florida is an exception in that it employs home rule for most activities, but reserves taxing authority for the state government).

Finally, there are situations where states utilize a combination of Home Rule and Dillon's Rule provisions.

Other than the largest cities, most local communities do not have specially designated offices of homeland security or any other terrorism-specific government office or agency. In general, local communities rely on the skills and training of their teams of first responders who include the fire, police, emergency management, emergency medical, and other officials that live within their jurisdictions.

In emergencies and disasters, local elected leaders and emergency managers dictate the response, and the local incident manager commands the use of resources brought to bear no matter what level of government those resources originate from. It is also important to remember that in a typical disaster response involving a presidential disaster declaration, all outside resources are provided to *support* the local response, not to replace it. Like their counterpart governors at the state level, mayors, county executives, and other locally elected and appointed officials are statutorily responsible for ensuring the public safety and welfare of their residents.

Chief elected officials serve as or appoint someone to serve as the jurisdiction's chief communicator and a primary source of information for homeland security-related information, and they ensure their governments are able to carry out emergency response activities. They are typically the key decision-makers in times of disaster as stipulated in the local emergency operations plan.

The largest portion of emergency response resources exists at the local level and includes over 1.3 million firefighters, almost 800,000 police officers, and almost 750,000 paramedics and EMTs. When terrorist attacks happen, these individuals are tasked with the bulk of rescue operations, fire suppression, medical care, decontamination, scene security, law enforcement, and many other functional requirements. They are the first to report on scene in all but the rarest cases, and they remain to manage the short- and long-term recovery issues related to site cleanup, decontamination, and planning for the rebuilding. First responders are the heart of the system that the nation depends on for the protection from and response to terrorist attacks. Local communities understand that they may have to manage the aftermath of a terrorist attack for a full 24–48 hours on their own before state or federal backup arrives. The high levels of first responder funding that has been provided since the 9/11 attacks is indicative that the federal government recognizes and addresses this capacity configuration.

Finally, local governments have been instrumental in the awareness of terrorism threats by developing and promoting public education campaigns that encourage citizens to report threats when they see them. Campaigns like "See Something, Say Something" are geared towards preventing the types of

actions that allowed terror attacks in the Tokyo and London subway systems, in buses in Israel and Spain, and in bombings almost anywhere in the world. Local governments must have the mechanisms through which this information, if provided by the public, can be properly processed, distributed to the local or other agency responsible for investigating, and responded to. This obviously requires training and planning throughout the local government and must have taken action to make that happen.

The DHS Office of Intergovernmental Affairs serves as a single point of contact for facilitation and coordination of departmental programs that impact state, local, territorial, and tribal governments. Through this office, DHS has brought together many organizations with a long history of interaction with, and support to, state, local, territorial, and tribal government organizations and associations, and the office is working hard to consolidate and coordinate that support. Today, this office facilitates the coordination of DHS-wide programs that impact state, local, territorial, and tribal governments; serves as the primary point of contact within DHS for exchanging information with state, local, territorial, and tribal homeland security personnel; identifies homeland security-related activities, best practices, and processes that are most efficiently accomplished at the federal, state, local, or regional levels; and utilizes this information to ensure that opportunities for improvement are provided to our state, territorial, tribal, and local counterparts.

The Private Sector

The private sector remains a principal terrorist target because facilities tend to be easier to attack (also referred to as “soft targets”), because attacks can result in more civilian casualties and economic impacts, and because certain terrorist organizations or individuals prefer to engage directly with particular businesses or organizations when those organizations are the focus of their terrorist campaign. But businesses have responded to the growing threat in a number of ways, especially since 9/11, 2001.

First, businesses have gone to great lengths to increase at-work and at-home disaster preparedness of their employees, recognizing that the business is only as strong as its employee base. Business owners and managers are beginning to recognize that the business will be much more profoundly affected if employees are unable to come to work or to remain at work due to the employees’ need to address personal impacts. Businesses have also taken great steps to protect their physical resources including their facilities, equipment, and vehicles, their data, and their operations. The security industry that supports these activities has grown to almost \$350 billion in revenue per year in response to increases in both real and perceived threats ([ASIS, 2013](#)). And finally, the private sector has become a primary source for government homeland security research and technological innovation. Examples of these contributions include passenger and freight scanning equipment at ports of entry and exit, imaging and surveillance technologies, and personal protection equipment for responders. In line with capitalist markets these products are developed in pursuit of an

eventual revenue stream, but the end result for the public is access to leading technologies that increase public safety and security beyond what would otherwise be possible. The private sector also contributes to terrorism-risk management. Prior to events, businesses are taking a greater role in providing counterterrorism intelligence to government authorities and in forming relationships that enable them to better understand the risks they themselves face as a likely terror target. In response, businesses have provided or supported many of the capabilities to decontaminate and/or reconstruct buildings damaged in a terror attack. Additionally, much of the equipment needed to protect citizens and responders comes from private-sector research, development, and sales. Private contractors provide training in WMD preparedness and response, and likewise, the private sector maintains many of the chemicals and biological materials that must be protected from theft or targeting by terrorists.

Business resilience is key to community resilience. In the aftermath of a terror attack, the community and in some cases the country depends on businesses being able to continue their work, whether they are a utility owner and operator, a transportation or shipping provider, an energy provider, a producer or seller of food, or anything else communities depend on to function. This is no different than in the aftermath of natural and technological disasters, other than the lasting impact of fear on citizen and consumer behaviors. The impacts sustained by the tourism sector following the 9/11 attacks, are indicative of how public sentiment and behaviors differ when a disaster has intentional origins.

Other Homeland Security Structures

Nonprofit organizations, faith-based groups, civic organizations, and other nongovernmental organizations participate to varying degrees in the management of terrorist emergencies and disasters, just as they do in non-terrorist events. Most citizens are aware of their role because of the American Red Cross presence in almost every American community. But there are hundreds of other local and national organizations that address different aspects of terrorism preparedness and/or response, or which serve more comprehensive needs of specific populations that they serve (e.g., the poor, the elderly, those with functional needs, or immigrants, for instance).

These groups' efforts help to reduce the vulnerability of communities, which in turn makes terror attacks less likely to have significant immediate and long-term impacts. And in the response to disasters, these organizations address many of the needs of the population that are not fully filled by government agencies. Following 9/11, NGOs managed the bulk of the tens of thousands of victims who requested psychosocial counseling, as well as many other needs like food and housing assistance.

At the national, state, and local levels, there are associates of specific NGOs that are focused on disaster response called Voluntary Organizations Active in Disasters (VOADs). VOADs help NGOs to coordinate their efforts, and respond when needed in any kind of disaster, whether caused by a terror attack or

natural hazard. Community-based NGOs are also taking on the terror threat itself. Examples of these can be seen in almost every city and town, and include organizations like Neighborhood Watch, Community Emergency Response Teams (CERTs), and other civic and professional organizations like the Lions Club or Rotary International. These groups often have a unique knowledge or understanding of local terror threats, local response capabilities, and special needs within their jurisdictions.

Finally, citizens themselves are a critical component of terrorism preparedness, prevention, response, and recovery. People need to understand the threats they face and must take action to reduce that threat for themselves and their community. Citizens represent the greatest resource in terms of eyes and ears capable of detecting terror attacks in planning or in progress whether that includes purchasing materials for an attack, hearing about the planning or witnessing surveillance, or seeing suspicious activity that might come before an attack such as leaving behind a backpack or suitcase, running from a car parked in a no parking zone, or other behaviors.

In the aftermath of the attack, even before the emergency responders arrive, citizens must know what to do to protect themselves from further harm and to help those directly impacted.

Funding for First Responders and Emergency Management

For state and local government, the events of 9/11 resulted in an extraordinary increase in funding for first responders—fire, police, and emergency medical technicians—and emergency management activities. Also, the number of federal government agencies and programs now providing funds for these activities has increased significantly. In the first responder community, historically only the police have received significant funding from the federal government. Fire departments across the country traditionally have raised the majority of their funding from local sources. Emergency medical technicians are often private contractors paid for by local and state government sources.

Proper training and equipping of firefighters responding to a biochemical terrorist attack has been a concern among the fire services community and FEMA since the early 1990s. Passage of the Fire Prevention and Assistance Act in 2000 was the first effort by Congress to support the nation's paid and volunteer fire departments. In the spring of 2001, FEMA initiated a new Fire Grant program that provided \$100 million in small grants to local fire departments for equipment, protective gear, training, and prevention programs. In 2002, the amount available for this FEMA "Fire Grants" (Assistance to Firefighters Grant Program) increased to \$300 million. By 2004, that amount had risen to over \$700,000. After dropping for a few years, the funding through this program provided to firefighters peaked in 2009 at \$985 million. It has since hovered in the \$650–\$680 million range ever since (see [Table 9.2](#)). Of course these fire grants only represent a fraction, albeit a large one, of the \$3 to \$3.5 billion spent on first responders each year for which the bulk is used to equip and train first responders for terrorism-related events.

Table 9.2

Appropriations for Firefighter Assistance 2001-2016 (Assistance for Firefighters, SAFER, and Fire Station Construction (SCG) Grants) (in \$Millions)

Fiscal Year	AFG Grant	SAFER Grant	SCG Grant	Total
2001	100			100
2002	360			360
2003	745			745
2004	746			746
2005	650	65		715
2006	539	109		648
2007	547	115		662
2008	560	190		750
2009	565	210	210	985
2010	390	420		810
2011	405	405		810
2012	337.5	337.5		675
2013	321	321		642
2014	340	340		680
2015	340	340		680
2016	345	345		690
Total	7280	3190	21	10,700

Source: Kruger, Lennard G. 2016. Assistance to Firefighters Program: Distribution of Grant Funding. Congressional Research Service. January 4. <http://bit.ly/295pUAR>.

FEMA is not the only source of funding for state and local government terrorist incident capacity. The Department of Justice, through a variety of

programs, funds the acquisition of equipment and technology. The Department of Health and Human Resources provides substantial funding to state and local government to address the threat of biochemical terrorist attacks. The Center for Disease Control funds public health planning and capacity building and bolstering of the national pharmaceutical stockpile. The Department of Defense provides funding for emergency management training for military personnel and community officials.

Communicating Threat Information to the American People

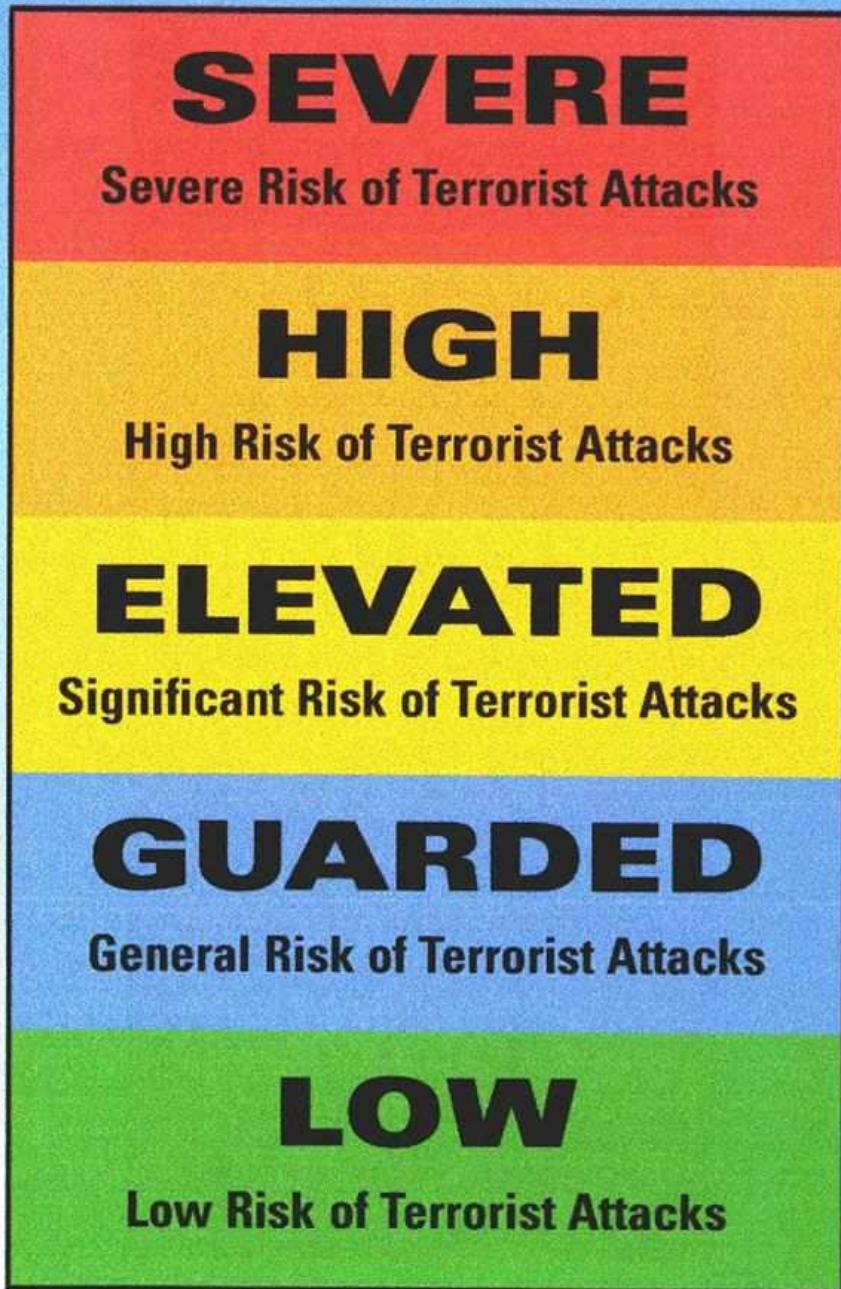
On Apr. 20, 2011, former DHS Secretary Janet Napolitano announced the implementation of the National Terrorism Advisory System (NTAS). The NTAS took the place of the much-maligned color-coded Homeland Security Advisory System (HSAS) (Fig. 9.5) that had been in place since 2002. The HSAS was born out of Homeland Security Presidential Directive-3 (HSPD-3), which was issued on Mar. 11, 2002, and stated that:

The nation requires a Homeland Security Advisory System to provide a comprehensive and effective means to disseminate information regarding the risk of terrorist acts to federal, state, and local authorities and to the American people. Such a system would provide warnings in the form of a set of graduated “Threat Conditions” that would increase as the risk of the threat increases. At each Threat Condition, federal departments and agencies would implement a corresponding set of “Protective Measures” to further reduce vulnerability or increase response capability during a period of heightened alert.

This system is intended to create a common vocabulary, context, and structure for an ongoing national discussion about the nature of the threats that confront the homeland and the appropriate measures that should be taken in response. It seeks to inform and facilitate decisions appropriate to different levels of government and to private citizens at home and at work.



Homeland Security Advisory System



www.homelandsecurity.gov

FIGURE 9.5 The Homeland Security Advisory System (HSAS) was unveiled in 2002. It was replaced by the National Terrorism Advisory System (NTAS) in

2011.

The system which was designed to combine threat information with vulnerability assessments and provide communications to public safety officials and the public, had three components:

- **Homeland Security Threat Advisories.** Contains actionable information about an incident involving, or a threat targeting, critical national networks or infrastructures or key assets.
- **Homeland Security Information Bulletins.** Communicates information of interest to the nation's critical infrastructures that do not meet the timeliness, specificity, or significance thresholds of warning messages.
- **Color-Coded Threat Level System.** Used to communicate with public safety officials and the public at large through a threat-based, color-coded system so that protective measures can be implemented to reduce the likelihood or impact of an attack.

Since its inception, concerns had been raised about the level of information provided through the HSAS. These concerns were shared by both the general public and members of the first-responder community (e.g., police, fire, and emergency medical technicians), as well as local officials responsible for ensuring public safety. The Partnership for Public Warning (PPW) was formed in Jan. 2002 as a partnership among the private sector, academia, and government entities at the local, state, and federal levels for the purpose of better coordinating disaster warning programs. PPW is a nonprofit entity with its stated mission to "promote and enhance efficient, effective, and integrated dissemination of public warnings and related information so as to save lives, reduce disaster losses and speed recovery" (PPW, 2008).

In May 2003, PPW published "A National Strategy for Integrated Public Warning Policy and Capability," which examined the current status of public warning systems, practices, and issues across the United States. The report stated, "Working together in partnership, the stakeholders should assess current warning capability, carry out appropriate research and develop the following:

- A common terminology for natural and man-made disasters
- A standard message protocol
- National metrics and standards
- National backbone systems for securely collecting and disseminating warnings from all official sources
- Pilot projects to test concepts and approaches
- Training and event-simulation programs
- A national multimedia education and outreach program" (Partnership for Public Warning, 2003)

In her announcement concerning the NTAS, Secretary Napolitano stated, "The terrorist threat facing our country has evolved significantly over the past 10 years, and in today's environment—more than ever—we know that the best security strategy is one that counts on the American public as a key partner in securing our country." DHS released the document entitled "A Public Guide to

the NTAS” as part of its effort to announce its establishment (DHS, 2011). Additional information concerning the NTAS released by DHS in Apr. 2011 is presented in the sidebar “National Terrorism Advisory System (NTAS).” Fig. 9.6 explains each section of the NTAS alert, and a sample NTAS alert is presented in Fig. 9.7.

National Terrorism Advisory System (NTAS)

Under NTAS, DHS coordinates with other federal entities to issue detailed alerts to the public when the federal government receives information about a credible terrorist threat. These alerts provide a concise summary of the potential threat including geographic region, mode of transportation, or critical infrastructure potentially affected by the threat, actions being taken to ensure public safety, as well as recommended steps that individuals, communities, businesses, and governments can take to help prevent, mitigate, or respond to a threat. NTAS alerts include a clear statement on the nature of the threat, which is defined in one of two ways:

- **Elevated Threat:** Warns of a credible terrorist threat against the United States
- **Imminent Threat:** Warns of a credible, specific, and impending terrorist threat against the United States

Depending on the nature of the threat, alerts may be sent to law enforcement, distributed to affected areas of the private sector, or issued more broadly to the public through both official and social media channels, including a designated DHS webpage (<http://bit.ly/2fi3UEc>), Facebook, and Twitter @NTASAlerts. NTAS alerts and posters may be displayed in public places such as transit hubs or airports, or in specially designated locations like government buildings. NTAS threat alerts are issued for a specific time period and automatically expire as indicated in the alert. Alerts may be extended if new information becomes available or as a specific threat evolves.

Source: DHS, 2011, <http://1.usa.gov/28YGaOv>.

A Public Guide to the NTAS

The National Terrorism Advisory System

The National Terrorism Advisory System, or NTAS, replaces the color-coded Homeland Security Advisory System (HSAS). This new system will more effectively communicate information about terrorist threats by providing timely, detailed information to the public, government agencies, first responders, airports and other transportation hubs, and the private sector. It recognizes that Americans all share responsibility for the nation’s security, and should always be aware of the heightened risk of terrorist attack in the United States and what they should do.

NTAS Alerts

After reviewing the available information, the Secretary of Homeland Security will decide, in coordination with other Federal entities, whether an NTAS Alert

should be issued. NTAS Alerts will only be issued when credible information is available. These alerts will include a clear statement that there is an imminent threat or elevated threat. Using available information, the alerts will provide a concise summary of the potential threat, information about actions being taken to ensure public safety, and recommended steps that individuals, communities, businesses, and governments can take to help prevent, mitigate, or respond to the threat.

The NTAS Alerts will be based on the nature of the threat: in some cases, alerts will be sent directly to law enforcement or affected areas of the private sector, while in others, alerts will be issued more broadly to the American people through both official and media channels. NTAS Alerts contain a sunset provision indicating a specific date when the alert expires—there will not be a constant NTAS Alert or blanket warning that there is an overarching threat.

If threat information changes for an alert, the Secretary of Homeland Security may announce an updated NTAS Alert. All changes, including the announcement that cancels an NTAS Alert, will be distributed the same way as the original alert.

The NTAS Alert—How Can You Help?

Each alert provides information to the public about the threat, including, if available, the geographic region, mode of transportation, or critical infrastructure potentially affected by the threat; protective actions being taken by authorities; and steps that individuals and communities can take to protect themselves and their families, and help prevent, mitigate or respond to the threat.

Citizens should report suspicious activity to their local law enforcement authorities. The “If You See Something, Say Something” campaign across the United States encourages all citizens to be vigilant for indicators of potential terrorist activity, and to follow NTAS Alerts for information about threats in specific places or for individuals exhibiting certain types of suspicious activity. Visit www.dhs.gov/ifyouseesomethingsaysomething to learn more about the campaign.

Alert Announcements

NTAS Alerts will be issued through state, local, and tribal partners, the news media, and directly to the public via the following channels:

- Via the official DHS NTAS webpage—<http://bit.ly/2fi3UEc>
- Via email signup at—<http://bit.ly/2fi3UEc>
- Via social media
- Facebook—<http://bit.ly/2fJKAjV>
- Twitter—<http://bit.ly/2e7i5vV>
- Via data feeds, web widgets, and graphics—<http://bit.ly/2fi3UEc>.

The public can also expect to see alerts in places, both public and private, such as transit hubs, airports, and government buildings.

Source: DHS, 2011, “NTAS Guide: National Terrorism Advisory System Public Guide,” <http://bit.ly/291oxBZ>.



National Terrorism Advisory System
Alert
www.dhs.gov/alerts

DATE & TIME ISSUED: XXXX

SUMMARY

The Secretary of Homeland Security informs the public and relevant government and private sector partners about a potential or actual threat with this alert, indicating whether there is an “imminent” or “elevated” threat.

DURATION

An individual threat alert is issued for a specific time period and then automatically expires. It may be extended if new information becomes available or the threat evolves.

DETAILS

- This section provides more detail about the threat and what the public and sectors need to know.
- It may include specific information, if available, about the nature and credibility of the threat, including the critical infrastructure sector(s) or location(s) that may be affected.
- It includes as much information as can be released publicly about actions being taken or planned by authorities to ensure public safety, such as increased protective actions and what the public may expect to see.

AFFECTED AREAS

- This section includes visual depictions (such as maps or other graphics) showing the affected location(s), sector(s), or other illustrative detail about the threat itself.

HOW YOU CAN HELP

- This section provides information on ways the public can help authorities (e.g. camera phone pictures taken at the site of an explosion), and reinforces the importance of reporting suspicious activity.
- It may ask the public or certain sectors to be alert for a particular item, situation, person, activity or developing trend.

STAY PREPARED

- This section emphasizes the importance of the public planning and preparing for emergencies before they happen, including specific steps individuals, families and businesses can take to ready themselves and their communities.
- It provides additional preparedness information that may be relevant based on this threat.

STAY INFORMED

- This section notifies the public about where to get more information.
- It encourages citizens to stay informed about updates from local public safety and community leaders.
- It includes a link to the DHS NTAS website <http://www.dhs.gov/alerts> and <http://twitter.com/NTASAlerts>

If You See Something, Say Something™. Report suspicious activity to local law enforcement or call 911.

The National Terrorism Advisory System provides Americans with alert information on homeland security threats. It is distributed by the Department of Homeland Security. More information is available at www.dhs.gov/alerts. To receive mobile updates www.twitter.com/NTASAlerts.

If You See Something Say Something™ used with permission of the NY Metropolitan Transportation Authority.

FIGURE 9.6 NTAS alert fact sheet. DHS, 2011, <http://bit.ly/2e7extS>.

@Seismicisolation
594



National Terrorism Advisory System

Bulletin

www.dhs.gov/advisories

DATE AND TIME ISSUED: 06/15/2016 2:00 P.M. ET

SUMMARY

In December, we described a new phase in the global threat environment, which has implications on the homeland. This basic assessment has not changed. In this environment, we are particularly concerned about homegrown violent extremists who could strike with little or no notice. The tragic events of Orlando several days ago reinforce this. Accordingly, increased public vigilance and awareness continue to be of utmost importance. This bulletin has a five-month duration and will expire just before the holiday season. We will reassess the threats of terrorism at that time.

ADDITIONAL DETAILS

- Since issuing the first Bulletin in December, our concerns that violent extremists could be inspired to conduct attacks inside the U.S. have not diminished.
- Though we know of no intelligence that is both specific and credible at this time of a plot by terrorist organizations to attack the homeland, the reality is terrorist-inspired individuals have conducted, or attempted to conduct, attacks in the United States.
- DHS is especially concerned that terrorist-inspired individuals and homegrown violent extremists may be encouraged or inspired to target public events or places.
- As we saw in the attacks in San Bernardino, Paris, Brussels, and, most recently, Orlando, terrorists will consider a diverse and wide selection of targets for attacks.
- Terrorist use of the Internet to inspire individuals to violence or join their ranks remains a major source of concern.
- In the current environment, DHS is also concerned about threats and violence directed at particular communities and individuals across the country, based on perceived religion, ethnicity, nationality or sexual orientation.

U.S. GOVERNMENT COUNTERTERRORISM EFFORTS

- DHS and the FBI continue to provide guidance to state and local partners on increased security measures. The public may observe an increased law enforcement and security presence across communities, in public places and at events in the months ahead. This may include additional restrictions and searches on bags, more K-9 teams, and the use of screening technologies.
- The FBI is investigating potential terrorism-related activities associated with this broad threat throughout the United States. Federal, state, and local authorities are coordinating numerous law enforcement actions and conducting community outreach to address this evolving threat.

HOW YOU CAN HELP

- Report suspicious activity to local law enforcement or public safety officials who are best positioned to respond and offer specific details on terroristic indicators.
- Suspicious activity or information about a threat may also be reported to [Fusion Centers](#) and the [FBI's Field Offices](#) - part of the Nationwide Suspicious Activity Reporting Initiative.
- Learn [how to recognize signs of pre-operational planning](#) associated with terrorism or other criminal activity.

BE PREPARED

- Be prepared for increased security and plan ahead to anticipate delays and restricted/prohibited items.
- In populated places, be responsible for your personal safety. Make a mental note of emergency exits and locations of the nearest security personnel. Keep cell phones in your pockets instead of bags or on tables so you don't lose them during an incident. Carry emergency contact details and any special needs information with you at all times. For more visit [Ready](#).

DURATION

This Bulletin will expire on
November 15, 2016
at 11:59 p.m.

TYPES OF ADVISORIES

Bulletin

Describes current developments or general trends regarding threats of terrorism.

Elevated Alert

Warns of a credible terrorism threat against the United States.

Imminent Alert

Warns of a credible, specific and impending terrorism threat against the United States.

STAY INFORMED

- The U.S. Government will provide additional information about any emerging threat as additional information is identified. The public is encouraged to listen to local law enforcement and public safety officials.
- We urge Americans to continue to travel, attend public events, and freely associate with others but remain vigilant and aware of surroundings.
- The Department of State issues [international travel alerts and warnings](#).

If You See Something, Say Something™. Report suspicious activity to local law enforcement or call 911.

The National Terrorism Advisory System provides information on homeland security issues and threats. It is distributed by the Department of Homeland Security. More information is available at: www.dhs.gov/advisories. To receive mobile updates: www.twitter.com/dhs.gov

If You See Something, Say Something™ used with permission of the NY Metropolitan Transportation Authority.

NTAS ADVISORY 2016.001-B

FIGURE 9.7 Sample NTAS alert. DHS.

DHS Budget

The White House has proposed a budget for fiscal year 2017 that requests a total of \$40.571 billion for the Department of Homeland Security (note that the total budget authority as requested is \$66.801 billion, but mandatory, fee, and

trust funds, carryovers from previous years, and changes to the FEMA disaster relief fund result in over \$26 billion in adjustments). This amount is a decrease of less than 1% (380 million) compared to the FY 2016 appropriation. The FY 2017 budget request targets the following five mission areas:

- Preventing terrorism and enhancing security
- Securing and managing our borders
- Enforcing and administering our immigration laws
- Safeguarding and securing cyberspace
- Strengthening national preparedness and resilience

Under this budget, DHS offices would be funded as shown in [Table 9.3](#).

Table 9.3
DHS Office Funding 2017 (Requested)

Directorate/Agency/Office	Funding Amount (in Millions)	Funding Percent (%)
Customs and Border Protection	\$13,941	21
Federal Emergency Management Agency	\$14,169	21.2
US Coast Guard	\$10,322	15.5
Transportation Security Agency	\$7589	11.4
Immigration and Customs Enforcement	\$6230	9.3
US Citizenship and Immigration Service	\$4018	6
National Protection and Programs Directorate	\$3045	4.6
FEMA Grants	\$2371	3.5
US Secret Service	\$2156	3.2
Science and Technology	\$759	.1
Department Management & Operations	\$1011	1.5
Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Office	\$501	.8
Analysis and Operations	\$266	.4
Federal Law Enforcement Training Center	\$243	.4
Office of the Inspector General	\$181	.2

Conclusion

Emergency management in the United States was changed forever by the events of 9/11. New foci, new funding, new partners, and new concerns associated with the fight against terrorism are changing the way emergency management functions in this country every day. At the federal government level, the Department of Homeland Security has been established, which includes FEMA and all the federal government disaster management programs. At the state level, governors and state emergency management directors are calling for better coordination, new communications technologies, and, always, more and more funding. At the local government level, terrorism remains an old threat but its relatively new elevation of importance greatly expands their facility security requirements and it has been added to a long list of needs and priorities. The threat of terrorism is one that cannot be ignored, and as the bombings at the 2013 Boston Marathon show, it can strike anywhere at any time. And as more recent attacks both in Europe and in the United States (e.g., the Orlando nightclub shooting), even homegrown terrorism perpetrated by US citizens can have complex origins that are tied to conflicts thousands of miles away.

The United States took its typical response to terrorism when it became an inescapable reality in 2001. A massive amount of public funding was repurposed in a commitment to reduce the problem. The ability of the Department of Homeland Security to achieve enhanced levels of coordination has certainly improved, but this is a long-term effort and the nation still has a long way to go. Many attacks have been prevented, as touted by the intelligence community and DHS; but those few attempts to are ultimately successful despite the nation's best efforts to prevent them have far reaching consequences — and thus the homeland security effort is an ongoing one that will not likely end. And while DHS can participate in the prevention role alongside the intelligence community, the military, diplomatic corps, and law enforcement, the emergency management role of FEMA is largely divorced from these efforts given its mandate. What FEMA can offer is a better prepared and equipped first responder cadre and better systems and plans to deal with the aftermath of attacks that succeed.

The question of cost effectiveness will always remain. The likelihood of natural and technological disasters has already proven to be far greater than that of terrorist attacks. In the years following the 9/11 terrorist attacks, the United States has been affected by hurricanes, floods, wildfires, chemical accidents, transportation accidents, volcanoes, ice storms, tornadoes, severe winter weather, avalanches—the list goes on and on. Meanwhile, the deaths, injuries, and damages caused by terrorist events pale in comparison even when we consider the 2013 Boston attacks and the 2016 Orlando attack (neither of which required a presidential disaster declaration). The Department of Homeland Security will need to continually reassess its priorities in terms of terrorism versus other less sinister hazards, and shift funding as appropriate.

The terrorist threat will never go away completely, but over time it should require much less of the attention of the nation's first responders, state responders, and federal government preparedness and response agencies.

Important Terms

Adjutant General
After-action Report
Critical infrastructure
Homeland Security Presidential Directive
National Terrorism Advisory System

Self-Check Questions

1. How does the terrorism hazard differ from its natural and technological counterparts?
2. What is the goal of emergency management in regards to the terrorism threat?
3. How much money did the federal government spend in the response to and recovery from the 9/11 attacks?
4. What did the two 9/11-related after-action reports say about the capabilities of first responders?
5. What has been the most significant result of the 9/11 attacks for state and local emergency managers?
6. What did the Post-Katrina Emergency Management Reform Act do?
7. Other than DHS, what federal agencies provide terrorism-based funding for first responders?
8. What was the purpose of the 911 Commission? What did the Commission find?
9. How do states respond to the terrorist threat?
10. How did Hurricane Katrina affect terrorism preparedness in the United States?

Out-of-Class Exercises

Visit the website for your state homeland security office. Where in government is this office? What grants and other assistance does it provide to local governments and citizens of the state? Is this office co-located with the office of emergency management, or is it a separate office? What is the experience of the lead executive of the office?

The Future of Emergency Management

Abstracts

Change has remained a constant in emergency management since 2000. In the aftermath of the Sep. 11, 2001 terrorist attacks, the nation's emergency management system experienced a drastic change in its all-hazards approach to risk to one that focused on the singular terrorism hazard. This particular change is believed to have been the principle cause of the botched response to Hurricane Katrina. Following that event, another change occurred as the focus returned to all-hazards. And again, as the dust rises in the effort to rebuild the Northeast states impacted by Hurricane Sandy, we are seeing new changes to the manner in which our government approaches recovery.

Keywords

Business; Federal Recovery Assistance Program; funding; government; information management; leadership and volunteer agency

Change has remained a constant in the emergency management profession since 2000. In the aftermath of the Sep. 11, 2001 terrorist attacks, the nation's emergency management system experienced a drastic shift in its all-hazards risk management approach to an approach focused on the singular terrorism hazard. This particular change is believed to have been the principle cause of the inadequate response to Hurricane Katrina. Following that event, the discipline returned to its all-hazards focus, yet problems with funding dogged response in the aftermath of Hurricane Sandy just a few years later. And as the dust continues to rise from ongoing disaster recovery efforts in the Sandy-affected states, we see more and more changes impacting the manner in which our government approaches both response and recovery.

Change in the emergency management profession is not, however, unique to the 21st century. In fact, it was an all-hazards focus that characterized the Federal Emergency Management Agency (FEMA) when it was created in 1979, yet all of that changed in the 1980s when the singular hazard of nuclear attack planning dominated the agenda. And it was Hurricane Andrew in 1992 that swung the pendulum back again to an all-hazards approach.

Like so many other government functions, emergency management is guilty of forgetting the past and needlessly repeating history. But how can emergency management break this cycle and establish a stable and consistent approach to the multitude of hazards our country faces and will continue to face in the future? Which of these changes need to be institutionalized, and what needs to happen to ensure a secure future for emergency management that best serves the individuals, businesses, and communities that comprise the United States?

The purpose of this chapter is to establish where the emergency management profession stands at the time of publication (2017); to identify what changes the authors believe are required for the emergency management profession as it evolves; and how the authors believe the nation and the emergency management community can get there.

Where Is Emergency Management Now?

A lot has happened since the previous (fifth) edition of this book was published in 2013—not just in the area of emergency management but also across all sectors and all regions of the country. Some of the most notable of these changes include:

- The rising costs of major disasters, typified by Hurricanes Irene and Sandy and the ongoing national drought crisis.
- The designation by President Obama of HUD Secretary Shaun Donovan to lead federal recovery efforts in the aftermath of Hurricane Sandy, representing the first time since 1993 that the head of FEMA has not served in this capacity (yet another instance of history repeating).
- Congressional action in 2015 to provide \$30 million dollars for FEMA's Pre-Disaster Mitigation Program, effectively breathing new life into the program.
- Reduced funding to the states by FEMA's Emergency Management Performance Grant (EMPG) program that in turn will likely result in reduced capabilities at both the state and local levels.
- Passage of the Homeowners Flood Insurance Affordability Act of 2014 in the aftermath of Hurricane Sandy, which modified the rating system of the Biggert-Waters Flood Insurance Reform Act of 2012. This legislation called for reforms in rate setting, appeals, and mapping, and established a Flood Insurance Advocate.
- Emergence of social media as the preferred source of information by a majority of Americans during major disasters like Hurricane Sandy, and the associated recognition and acceptance by emergency managers that the communication of timely and accurate information to the public through both traditional (television, radio, and newspapers) and social (Facebook, YouTube, Twitter, etc.) media outlets is an important and essential part of the job.
- The reduction in homeland security and emergency management preparedness funding such as the reduction in funding for the Urban Areas Security Initiative (UASI) from \$832 million available in 2010 to \$580 million in 2016.
- There was a remarkable struggle to pass the supplemental funding bill for Hurricane Sandy. This signaled a break from past practices wherein members of Congress supported disaster funding in each others' states despite the fact that their own state might not benefit (in recognition that their own constituents might receive the same in a future event).
- The development and adoption of the National Disaster Recovery Framework, the National Mitigation Framework, and the National Prevention Framework by FEMA/DHS that, like the National Response Framework, provide guidance on how all entities will work together but do not detail how the federal role in any these phases will work (as the Federal Response Plan detailed in the past).
- The development of a suite of community-based assessment and planning

tools developed by climate change adaptation specialists that communities can use to reduce the impacts of future disaster events made more severe and more frequent by climate change.

- The increase in Business Continuity Planning (BCP) activities among large and midsized businesses as new regulatory requirements have been approved by Congress expanding the number of business sectors requiring BCP plans per what Sarbanes-Oxley did for the financial services sector.
Events or changes that have impacted the nation's mainstream emergency management community from the outside include:
 - Politicians stepping up to lead in disaster response and recovery having learned an important lesson from the failures of President George W. Bush, Louisiana Governor Kathleen Blanco, and New Orleans Mayor Ray Nagin in Hurricane Katrina—shining examples of this new leadership include President Obama, New Jersey Governor Chris Christie, New York Governor Andrew Cuomo, and New York City Mayor Michael Bloomberg in Hurricane Sandy.
 - FEMA launching a new initiative called the Strategic Foresight Initiative, designed to assist the emergency management community in preparing for whatever challenges and opportunities the future holds.
 - Community resilience, an idea and movement started by the private and nonprofit worlds, becoming a mainstream concept.
 - Emergency management practitioners and other stakeholders recognizing they have a role to play in addressing climate change.

In summary, there have been both positive and not so positive changes in the past 3 years. On the positive side, FEMA has repaired its reputation and can again be depended on in times of need to support state and local response efforts. Emergency managers at all levels have embraced social media and the two-way role it can play in improving disaster communications and information dissemination. Politicians now recognize both the downside and the upside of disasters (especially disaster response) and have taken steps to hire experienced emergency managers and step-up their leadership role and visibility in a disaster. FEMA's Whole Community approach and the SFI will make communities better prepared and hopefully, more resilient. New partners in the business, economic development, and planning sectors are becoming more involved in emergency management.

On the not so positive side, federal funding in all four phases of emergency management has been severely reduced and questions remain about how Congress will act in future disasters. The United States has fallen far behind the rest of the world in disaster risk-reduction. Funding for FEMA's EMPG program, FEMA's Higher Education Program, and other FEMA programs has suffered from congressional budget delays and the sequestration impacting how state and local emergency management agencies operate and the education of the next generation of emergency managers. Climate change continues to create more severe and more frequent weather disasters that will only further strain our nation's emergency management system.

Future Challenges and Opportunities

Despite all of these issues and challenges, there are significant opportunities available now and in the future to strengthen emergency management in the United States and to help build disaster-resilient communities. A strong foundation has been set and new directions have at least been identified and in some places tentative steps have been taken to address the challenges and take advantage of the opportunities. Climate change continues to play a significant role in the size and frequency of large weather-related disasters, and that is likely to only increase in the future as nations around the world struggle to address the climate change issue in any sort of coordinated approach.

We have identified the following general areas where both challenges and opportunities exist in the future. Not surprisingly, we have addressed some of these areas in past editions of this book and continue to believe that they still need to be addressed.

1. Leadership—The chief executive, whether in government, the business community, or the nonprofit sector, sets the priorities for his or her organization. Those priorities are reflected in the organization's programming and budgeting. Emergency management and disaster resiliency were never top priorities in the past for the overwhelming majority of chief executives. President Clinton made helping Americans in a time of crisis a top priority for his administration and this priority was reflected in FEMA's performance and the performance of all federal departments and agencies. President Obama, by appointing Administrator Fugate, signaled that he recognized it was important, and Administrator Fugate has delivered timely and effective responses to numerous disasters. The response during Hurricane Sandy by President Obama, Governors Christie and Cuomo, and Mayor Bloomberg, reflected their priorities. In the aftermath of Sandy, business executives are making those investments, a good example being New York Medical Center. These are steps in the right direction, but all of the nation's leaders must progress beyond leading in response to supporting and championing recovery programs that are centered on improving the communities and the built environment not just post-disaster but also pre-disaster. Members of Congress, state legislatures, and city and county councils must also step-up and recognize the need to reorder spending and programming priorities in order to protect their community from future disasters and to promote community resiliency. This type of change will not come easily and will likely require the occurrence of successive catastrophic events in communities across the country, but history tells us that sooner or later it will happen.

2. Climate Change—The abundance of information and evidence that our climate is changing can be seen in the long-lasting droughts in the Western United States, the increases in severe weather events that cause excessive flooding, increased wildfire activity, and the sea level rise that increasingly threatens our national security infrastructure (such as the threats faced in Norfolk, VA where the nation's largest Naval base could be underwater in the

near future along with the city's critical infrastructure and much of the population's housing). There is also the threat of pandemics fueled by climatic changes that promote the movement and expansion of disease vectors, as is being witnessed by the spread of formerly tropical diseases including Zika, Dengue, Malaria, and others. The social, economic, and environmental impacts of climate change affect our communities at all levels, and climate change is becoming a public safety issue that all emergency managers must recognize and manage. The International Association of Emergency Managers in a recently released Position Statement entitled "The Critical Role of Emergency Management in Climate Change Planning" recognized this fact and suggested the following: "Emergency Managers play a critical role in community resilience, including developing comprehensive strategies needed to address the range of hazards associated with climate change. Emergency managers should use climate research data to target emergency mitigation, preparedness and response actions for their communities". IAEM continues by adding that, "active participation and collaboration among emergency managers and other stakeholders throughout this planning process is essential for understanding and adapting to new and/or greater hazards and vulnerabilities." A call to arms must be made as climate change is quickly becoming the principal driver of emergency management evolution. It stands to greatly expand the community of emergency management stakeholders and the base of emergency management funding, and it merits promotion of the discipline's value as one that is critical to the achievement of community resilience (thereby supporting the nation's social and economic security). Emergency managers can and should be the focal point for addressing climate change as part of their vulnerability and hazard analyses. FEMA has taken a major step in leading the way. In 2015, FEMA demonstrated leadership when it announced that access to state mitigation funding will depend on the inclusion of climate change factors in local and state planning instruments. It is a big first step, and emergency management at all levels of government needs to add climate change to their portfolio if they want to remain truly relevant in the future.

3. Partnerships and Cultural Outreach—The nation's emergency management system has always worked best as a partnership between federal, state, and local government and the voluntary sector. This system of partnership drove the successes of the 1990s and has again to an increasing degree since 2008. The business community has significantly increased its emergency management practices and partnership presence and can now be considered a full partner in all phases of emergency management. Community-based organizations and neighborhood groups also need to become more involved in all four phases of mitigation, preparedness, response, and recovery. They are the eyes and ears in the neighborhood for emergency managers, and can likewise serve as the trusted voice of preparedness and warning messages as well as organizers of community mitigation projects. With this in mind, a challenge to the emergency management community is to enhance its understanding of the cultural diversity that exists in our communities and how they can become partners and assets to the work of emergency management. Different ethnic groups bring

different types of assets to achieving community resiliency. They can be a critical source of information during a response operation and a source of support for implementing other functions before, during, and after a disaster. As this nation's population grows more ethnically diverse, it will be critical for emergency managers at all levels of government recognize their potential contributions and encourage them to join in the partnership to make our communities safer from the impacts of disasters.

4. Communications and Technology—The emergency management community has historically been slow to embrace new technologies. This changed after the Sep, 11 terrorist attacks, and the field has been flooded with new information management, warning, and detection technologies. As noted earlier, social media has completely changed how communications work during a disaster. In general, emergency managers have embraced social media and have learned to use it to not only get information out but to take information in. After all, in modern society it can be said that anyone with a smartphone is a disaster communication specialist. The challenge is in harnessing the vast amounts of information that flow regularly in the social media world before, during, and after a disaster. New technologies are being developed for these purposes, and FEMA Administrator Fugate and others have endorsed these efforts and recognize their importance to effective emergency response and recovery. An opportunity remains to better utilize social media in creating an ongoing conversation with the public about disaster-preparedness and hazard mitigation. These new communications outlets possess unlimited potential in building the social capital needed to create and sustain community-based resiliency programs.

The other area of emerging technology that may impact the discipline of emergency management is how to best use the emerging technologies to predict the behavior of people during and after a disaster. This new field could become critical to the understanding of how groups of people will react to different disasters and assist in anticipating critical needs, distribution and leveraging of resources, and implementing of certain public safety strategies. In understanding behavioral phenomena, the research and education communities will be critical stakeholders.

5. Funding—After leadership, funding is the most critical need. With federal support being reduced and Congress' appetite for supplemental appropriations for disaster response and recovery waning, a new formula for funding all four phases of emergency management must be devised. In mitigation the federal government should create a Mitigation Trust Fund that has an annual appropriation similar to the Highway Safety Fund and that would provide matching funds for state and local hazard mitigation projects. State and local governments need to create locally generated funding sources similar to the sales tax increase implemented in Napa, California, the Stormwater drainage fee in Tulsa, Oklahoma, and the bond program issued in Berkeley, California, each used to match federal funding for hazard mitigation actions. Similar regular funding must be found at the state and local levels for disaster-preparedness programs. Besides government, the business and nonprofit

sectors must raise efforts to provide funding and/or programming that help communities build resiliency. The federal government must continue to be the backstop for funding for response and recovery efforts, especially in major disasters that overwhelm local and state resources. The Congress must reverse this current trend of bucking and delaying passage of disaster supplemental bills once the spending has been properly justified. Voluntary agencies and nonprofits provide a wide variety of funding and programming in recovery and this needs to be better coordinated in order to maximize its effectiveness.

Moving Forward

Two scenarios can be envisioned for the future of emergency management. In the first scenario, the nation continues to stumble from one disaster to the next, during which time climate change, budget woes, and increasing populations further diminish the existing emergency management capacity. Before long, response and recovery capacity fall so far behind typical requirements that events managed locally today become the disasters of tomorrow. The Disaster Relief Fund is simply not able to keep up with demands, and support from all levels fails to meet demands. This scenario ends with a bankrupting of our country, as has actually happened in less-developed nations, and is well within the possibilities of the United States given recent trends. The increase in the number of billion-dollar disasters occurring on an annual basis has shown no sign of slowing, and this exceeds any adjustments that can be made for inflation. Capacity must meet demand, and in the United States the demand for response and recovery resources and capabilities is increasing much faster than the system is working to keep up with. Without a greater commitment to funding and otherwise supporting systems and staff at all levels of government, and efforts to better integrate all sectors of society into the management of risk, this is not a far-fetched reality.

In the alternate scenario, the outcome is much more appealing. The emergency management system in the United States is revitalized, bringing in all of the key local partners who work every day on issues important to the community, but enlarging the circle to include individuals and groups that represent the cultural diversity of our communities, almost all of whom not only help to reduce vulnerability and risk but also contribute greatly to meeting response and recovery requirements when disasters do occur. These same groups are those that should support state and federal departments and agencies to assess community risks in concert with emergency planners, and chart a course for mitigating identified hazards and creating disaster-resilient communities. Their involvement bolsters the local emergency management capacity to levels where the community itself now single-handedly manages events that had once required outside assistance. This scenario tracks the direction the field is pushing towards at the international level, and it requires changes in public, private, and nonprofit sector perceptions of need. Changes in spending must, of course, follow suit, and every member of the community must be involved.

In order to make the second scenario a possible or even a likely reality, we must first admit that the overwhelming priority of the nation's emergency managers is response. This is true at all levels of government, not just at the local level, and the actions and efforts of the current FEMA administration hold true to this statement. As such, we are doing ourselves a collective disservice by expecting the emergency management community alone to lead the risk-reduction movement. For now, the community resiliency movement is being primarily funded by philanthropic organizations. However, when the

government makes a concerted effort to help communities address climate change, a coming together of the resiliency support and climate change support could provide a powerful force for reducing risk and ensuring improved social and economic welfare. We must also acknowledge the shortfalls and failures of our current mitigation and preparedness communications efforts. The Internet has become the primary place to put preparedness information and, likewise, to assert our preparedness achievements. But preparedness needs are not uniform and therefore only through community-level social media and grassroots efforts can we effectively prepare citizens for the next disaster. And likewise, we must recognize the limits of these new technologies, especially for vulnerable populations who may avoid or be unable to access them, and ensure a more rounded, inclusive plan of action.

So how do we get there from here? Addressing the challenges identified in this chapter requires action by leadership at all levels of government and by champions within the public, business, volunteer, nonprofit, and academic disciplines. It requires a national-level discussion, collaborative problem solving among all sectors, and recognition of what failing to act will cause. This will, in turn, require a reordering of priorities at all levels of government and in the private and nonprofit sectors. In summary, it will require that we change how we incorporate planning for mitigating climate change, how we will build community resiliency, and how willing we are to invest in their future. Optimistically, we may be moving in that direction and, if we do, the relevancy of emergency management to our daily lives will take on critical new meaning.

Conclusion

The authors recognize that the changes we have recommended in this chapter will be very difficult and costly to implement. However, whatever the difficulty or the cost, the price of doing nothing will be much higher, as has been proven over and over again in past disasters. Our nation's communities cannot continue to tolerate the social, economic, and environmental disruption caused by major disasters and our country could be bankrupted in the future by an unending string of multibillion dollar events. We can and must change the way we deal with disasters now.

APPENDIX A

Acronyms

AAR After-Action Report

AEC Agency Emergency Coordinator

AFRO African Regional Office (WHO)

AOA Administration on Aging

AOR Areas of Responsibility (DOD)

ARC American Red Cross

ARES Amateur Radio Emergency Services

BHR Bureau for Humanitarian Response (USAID)

B-NICE Biological, Nuclear, Incendiary, Chemical, and Explosive (Weapons)

CARE Cooperative for Assistance and Relief Everywhere

CAT Crisis Action Team

CBDG Community Development Block Grant

CBRN Chemical, Biological, Radiological, and Nuclear (Weapons)

CBRNE Chemical, Biological, Radiological, Nuclear, and Explosive (Weapons)

CCP Crisis Counseling Assistance and Training Program

CCP Casualty Collection Point

CCP Citizens Corps Program

CDC Centers for Disease Control and Prevention, US Public Health Service

CDRG Catastrophic Disaster Response Group

CENTCOM Central Command (DOD)

CEPPO Chemical Emergency Preparedness and Prevention Office

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CFDA Catalog of Federal Domestic Assistance

CHE Complex Humanitarian Emergency
CJTF Commander for the Joint Task Force (DOD)
CMHS Center for Mental Health Services
CMOC Civil/Military Operations Center (DOD)
CMT Crisis Management Team
CNN Cable News Network
CRC Convention on the Rights of the Child
CRC Crisis Response Cell
CRM Crisis Resource Manager
CRS Catholic Relief Services
DAE Disaster Assistance Employee
DART Disaster Assistance Response Team (USAID)
DCE Defense Coordinating Element
DCO Defense Coordinating Officer
DCSA Defense Support of Civil Authorities
DEA Drug Enforcement Agency
DEST Domestic Emergency Support Team
DFO Disaster Field Office
DHHS Department of Health and Human Services
DHS Department of Homeland Security
DMAT Disaster Medical Assistance Team
DMORT Disaster Mortuary Response Team, National Disaster Medical System
DMTP Disaster Management Training Programme
DOD United States Department of Defense
DOJ Department of Justice
DOL Department of Labor
DOT Department of Transportation

DRC Disaster Recovery Center

DRD Disaster Response Division

DRRP Disaster Reduction and Recovery Programme

DUA Disaster Unemployment Assistance

EAS Emergency Alert System

EC Emergency Coordinator

ECHO European Community Humanitarian Organization

ECS Emergency Communications Staff

EDA Economic Development Administration

EGOM Empowered Group of Ministers (India)

EICC Emergency Information and Coordination Center

EMPG Emergency Management Performance Grants

EMRO Eastern-Mediterranean Regional Office (WHO)

EMS Emergency Medical Services

EOC Emergency Operations Center

ERC Emergency Response Coordinator (UN)

ERCG Emergency Response Coordination Group, Public Health Service/Centers for Disease Control and Agency for Toxic Substances and Disease Registry

ERD Emergency Response Division (UNDP)

ERL Emergency Recovery Loan (WBG)

ERT Emergency Response Team

ERT-A Emergency Response Team Advance Element

ERT-N National Emergency Response Team

ERU Emergency Response Unit (IFRC)

ESF Emergency Support Function

EST Emergency Support Team

EUCOM European Command (DOD)

EURO Regional Office for Europe (WHO)

FAA Federal Aviation Administration

FACT Field Assessment and Coordination Team (IFRC)

FAO Food and Agriculture Organization

FBI Federal Bureau of Investigation

FCO Federal Coordinating Officer

FECC Federal Emergency Communications Coordinator

FEMA Federal Emergency Management Agency

FERC FEMA Emergency Response Capability

FESC Federal Emergency Support Coordinator

FFP Office of Food for Peace (BHR)

FHA Foreign Humanitarian Assistance (DOD)

FHWA Federal Highway Administration

FIRST Federal Incident Response Support Team

FOC FEMA Operations Center

FRC Federal Resource Coordinator

FRERP Federal Radiological Emergency Response Plan

FRN FEMA Radio Network

FRP Federal Response Plan

FSA Farm Service Agency

GSN Global Seismographic Network

HAO Humanitarian Assistance Operations (DOD)

HAST Humanitarian Assistance Survey Team (DOD)

HAZUS Hazards—US (FEMA Consequence Modeling System)

HET-ESF Headquarters Emergency Transportation Emergency Support Function

HHS Department of Health and Human Services

HSAS Homeland Security Advisory System

HSEEP Homeland Security Exercise and Evaluation Program (ODP)

HSOC Homeland Security Operations Center

HSPD Homeland Security Presidential Directive

HUD Department of Housing and Urban Development

IAEM International Association of Emergency Managers

IASC Inter-Agency Standing Committee

IBRD International Bank for Reconstruction and Development (WBG)

ICP Incident Command Post

ICPAE Interagency Committee on Public Affairs in Emergencies

ICRC International Committee of the Red Cross

ICS Incident Command System

ICVA International Council for Voluntary Agencies

IDA International Development Association (WBG)

IDNDR International Decade for Natural Disaster Reduction (UN)

IDP Internally Displaced Persons

IFC International Finance Corporation (WBG)

IFG Individual and Family Grant

IFRC International Federation of Red Cross/Red Crescent Societies

IHP Individuals and Households Program

IIMG Interagency Incident Management Group

IMD Indian Meteorological Department

IMF International Monetary Fund

IMT Incident Management Team

INS Immigration and Naturalization Service

IO International Organization

ISCID International Centre for Settlement of Investment Disputes (WBG)

ISDR International Strategy for Disaster Reduction (UN)

JCS Joint Chiefs of Staff (DOD)

JFO Joint Field Office

JIC Joint Information Center

JOC Joint Operations Center

JTF Joint Task Force (DOD)

JTTF Joint Terrorism Task Force

MACC Multi-Agency Command Center

MIGA Multilateral Investment Guarantee Agency (WBG)

MMRS Metropolitan Medical Response System

MOA Memorandum of Agreement

MOU Memorandum of Understanding

MSF Medecins Sans Frontiers

NACo National Association of Counties

NASA National Aeronautics and Space Agency

NCA National Command Authority (DOD)

NDMOC National Disaster Medical Operations Center

NDMS National Disaster Medical System

NDMSOSC National Disaster Medical System Operations Support Center

NEHRP National Earthquake Hazard Reduction Program

NEIC National Earthquake Information Center

NEMA National Emergency Management Association

NEP National Exercise Program (ODP)

NEPEC National Earthquake Prediction Evaluation Council

NGO Nongovernmental Organization

NIMS National Incident Management System

NIRT Nuclear Incident Response Team

NIST National Institute of Standards and Technology

NMRT National Medical Response Team

NOAA National Oceanic and Atmospheric Administration

NPSC National Processing Service Center

NRC Nuclear Regulatory Commission

NRCC National Response Coordination Center

NRP National Response Plan

NRT National Response Team

NSEP National Security Emergency Preparedness

NSF National Science Foundation

NSSE National Security Special Event

NVOAD National Voluntary Organizations Active in Disaster

OCHA Office for the Coordination of Humanitarian Affairs

ODP Office for Domestic Preparedness

OEP Office of Emergency Preparedness, US Public Health Service

OET Office of Emergency Transportation

OFDA Office of US Foreign Disaster Assistance

OPA Office of Public Affairs

OS Operation Support (OFDA)

OSC On-Scene Coordinator

OSTP White House Office of Science and Technology Policy

OTI Office of Transition Initiatives (BHR)

PACOM Pacific Command (DOD)

PAHO Pan-American Health Organization (WHO)

PAO Public Affairs Officer

PFO Principal Federal Official

PK/HA Office of Peacekeeping and Humanitarian Affairs (DOD)

PM Office of Political/Military Affairs (DOD)

PMPP Prevention, Mitigation, Preparedness, and Planning (OFDA)

PNP Private Nonprofit

PRM Bureau of Population, Refugees, and Migration (USAID)

PS Program Support (OFDA)

PSA Public Service Announcement

PSYOPS Psychological Operations (DOD)

PVO Private Voluntary Organization

QIP Quick Impact Project (UNHCR)

RACES Radio Amateur Civil Emergency Services

RDD Radiological Dispersion Device

REACT Radio Emergency Associated Communication Team

REC Regional Emergency Coordinator

RECC Regional Emergency Communications Coordinator

RECP Regional Emergency Communications Plan

RET Regional Emergency Transportation

RETCO Regional Emergency Transportation Coordinator

RMT Response Management Team (OFDA)

ROC Regional Operations Center

ROE Rules of Engagement (DOD)

ROST Regional Operations Support Team

RRT Regional Response Team

SAC FBI Senior Agent-in-Charge

SAMHSA Substance Abuse and Medical Health Services Administration

SAR Search and Rescue

SBA US Small Business Administration

SCO State Coordinating Officer

SEARO South-East Asia Regional Office (WHO)

SFHA Special Flood Hazard Areas

SFLEO Senior Federal Law Enforcement Official

SHSP State Homeland Security Program (ODP)

SIOC Strategic Information and Operations Center

SITREP Situation Report

SOCOM Special Operations Command (DOD)

SOUTHCOM Southern Command (DOD)

START Scientific and Technical Advisory and Response Team

TAG Technical Assistance Group (OFDA)

TOPOFF Top Officials Terrorism Exercise (biennial)

TRADE ODP Training and Data Exchange Group

TRANSCOM Transportation Command (DOD)

UASI Urban Areas Security Initiative

UN United Nations

UNDAC UN Disaster Assessment and Coordination

UNDP United Nations Development Programme

UNFPA United Nations Populations Fund

UNHCR United Nations High Commissioner for Refugees

UNHRD UN Humanitarian Response Depot

UNICEF United Nations Children's Fund

UNISDR United Nations Office for Disaster Risk Reduction

US&R/USAR Urban Search and Rescue

USACE United States Army Corps of Engineers

USACOM United States Atlantic Command (DOD)

USAID United States Agency for International Development

USDA United States Department of Agriculture

USGS United States Geological Survey

VMAT Veterinarian Medical Assistance Team

WB World Bank

WBG World Bank Group

WFP World Food Programme

WHO World Health Organization

WMD Weapons of Mass Destruction

WTC World Trade Center

ZECP Zone Emergency Communications Planner

APPENDIX B

Emergency Management Websites

Category	Organization/Agency	Website URL
Academic	Disasters Roundtable	Dels.nas.edu/dr/
Academic	Extension Disaster Education Network	http://eden.lsu.edu/
Academic	FEMA Emergency Management Institute	http://training.fema.gov/emi.aspx
Academic	George Washington University Institute for Crisis, Disaster and Risk Management	www.gwu.edu/~icdm
Academic	University of Colorado Hazards Center	www.colorado.edu/hazards
Academic	University of Delaware Disaster Research Center	http://www.udel.edu/DRC/
Academic	University of Wisconsin Disaster Management Center	https://epd.wisc.edu/dmc/
Disaster Information	Reuters AlertNet	http://www.reuters.com/subjects/natural-disasters
Disaster Information	Avalanche	www.avalanche.org
Disaster Information	Center for International Disaster Information	www.cidi.org
Disaster Information	Disaster Information Network	www.disaster.net
Disaster Information	Disaster News Network	www.disasternews.net
Disaster Information	Drought Monitor	droughtmonitor.unl.edu/
Disaster Information	Earthquake Hazard Program	http://earthquake.usgs.gov/
Disaster Information	EPA Oil Spills	https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations
Disaster Information	Flood Streamflow Conditions	http://waterwatch.usgs.gov/
Disaster Information	Global Disaster Alert and Coordination System	http://www.gdacs.org/
Disaster Information	Havaria Information Service	http://hisz.rsoe.hu/alertmap/index2.php
Disaster Information	National Hurricane Center	http://www.nhc.noaa.gov/
Disaster Information	NOAA Watch	http://www.spc.noaa.gov/products/watch/
Disaster Information	Pacific Disaster Center	www.pdc.org
Disaster Information	Relief Web	www.reliefweb.int
Disaster Information	The Disaster Center	www.disastercenter.com
Disaster Information	USGS Landslides	http://landslides.usgs.gov/
Disaster Information	Western Disaster Center	http://www.nasa.gov/centers/ames/researchpark/partners/non-profit/wdc.html
International	Asian Disaster Preparedness Center	www.adpc.net
International	Caribbean Disaster Emergency Management Agency	http://www.cdema.org/
International	Interaction	www.interaction.org
International	International Committee of the Red Cross	www.icrc.org
International	International Federation of Red Cross/Red Crescent Societies	www.ifrc.org
International	International Monetary Fund	www.imf.org
International	Pan American Health Organization	www.paho.org
International	Regional Disaster Information Center	http://www.cridlac.org/ing_index.shtml
International	UN Development Programme	www.undp.org
International	UN High Commissioner for Refugees	www.unhcr.ch
International	UN International Strategy for Disaster Reduction	www.unisdr.org
International	UN Office for the Coordination of Humanitarian Affairs	http://www.unocha.org/
International	UNICEF	www.unicef.org
International	World Bank	www.worldbank.org
International	World Bank Disaster Risk Management	http://www.worldbank.org/en/topic/disasterriskmanagement
International	World Food Programme	www.wfp.org
Journals/Magazines	<i>Australian Journal of Emergency Management</i>	https://ajem.infoservices.com.au/
Journals/Magazines	<i>Disaster Prevention and Management</i>	http://www.emeraldinsight.com/journal/dpm
Journals/Magazines	<i>Disaster Recovery Journal</i>	http://www.drj.com/
Journals/Magazines	<i>Government Technology Emergency Management Magazine</i>	www.emergencymgmt.com
Journals/Magazines	<i>Journal of Emergency Management</i>	http://www.pnpco.com/pn06001.html
Journals/Magazines	<i>Journal of Homeland Security</i>	http://www.homelandsecurity.org/journal/
Journals/Magazines	<i>Journal of Homeland Security and Emergency Management</i>	http://www.degruyter.com/view/j/jhsem
NGO	Action Against Hunger	www.actionagainsthunger.org
NGO	Amateur Radio Disaster Service	http://www.arrl.org/ares
NGO	Feeding America	www.feedingamerica.org
NGO	American Jewish World Service	Ajws.org
NGO	American Red Cross	www.redcross.org
NGO	CARE USA	www.care.org
NGO	Catholic Relief Services	http://www.crs.org/
NGO	Church World Service	http://cwsglobal.org/

NGO	Habitat for Humanity	www.habitat.org
NGO	Humane Society	http://www.humanesociety.org/
NGO	Institute for Business and Home Safety	http://disastersafety.org
NGO	Islamic Relief Worldwide	http://www.islamic-relief.com/
NGO	Mennonite Disaster Service	http://www.mds.mennonite.net/
NGO	NVOAD	www.nvoad.org
NGO	Oxfam	http://www.oxfam.org.uk/
NGO	Public Entity Risk Institute	http://www.primacentral.org/peri/
NGO	Salvation Army	www.salvationarmyusa.org
NGO	Save the Children	www.savethechildren.org
State and Local Government	Association of State Floodplain Managers	www.floods.org
State and Local Government	Emergency Management Assistance Compact	www.emacweb.org
State and Local Government	National Association of Counties	www.naco.org
State and Local Government	National Governors' Association	www.nga.org
State and Local Government	National League of Cities	www.nlc.org
State and Local Government	NEMA	www.nemaweb.org
State and Local Government	US Conference of Mayors	www.usmayors.org
Terrorism	Council on Foreign Relations: Terrorism	http://www.cfr.org/issue/terrorism/ri13
Terrorism	The Terrorism Research Center	http://www.terrorism.org/
US Government	FEMA	www.fema.gov
US Government	FEMA for Kids	https://www.ready.gov/kids
US Government	Centers for Disease Control	http://www.cdc.gov/
US Government	Department of Health and Human Services	www.hhs.gov
US Government	Department of Homeland Security	www.dhs.gov
US Government	Disaster Assistance	https://www.disasterassistance.gov/
US Government	Environmental Protection Agency	https://www.epa.gov/natural-disasters
US Government	Environmental Protection Agency Chemical Preparedness and Prevention	https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations
US Government	EPA Environmental Emergencies	http://www.epa.gov/oswer/emergencies.htm
US Government	Federal Bureau of Investigation	www.fbi.gov
US Government	FEMA Disaster Declarations	http://www.fema.gov/disasters/
US Government	FEMA HAZUS	http://www.fema.gov/hazus
US Government	National Flood Insurance Program	http://www.fema.gov/national-flood-insurance-program
US Government	National Interagency Fire Center	www.nifc.gov
US Government	National Mental Health Information Center	http://www.samhsa.gov/
US Government	NOAA Northwest Weather and Avalanche Center	http://www.nwac.us/
US Government	NOAA Satellite and Information Service	http://www.nesdis.noaa.gov/
US Government	Ready.Gov	www.ready.gov
US Government	Small Business Administration	www.sba.gov
US Government	US Coast Guard National Response Center	http://www.nrc.uscg.mil/
US Government	US Department of Agriculture	www.usda.gov
US Government	US Department of State Terrorism Information Page	http://www.state.gov/m/ds/terrorism/
US Government	US Fire Administration	https://www.usfa.fema.gov/
US Government	US Secret Service	www.secretservice.gov
US Government	USGS Hazards Page	https://www2.usgs.gov/natural_hazards/
International	Sendai Framework	http://www.unisdr.org/we/coordinate/sendai-framework
International	International Recovery Platform	http://recoveryplatform.org
International	ASEAN Disaster Management and Emergency Response	http://www.ahacentre.org/about-aadmer
International	Asian Disaster Preparedness Center	http://www.adpc.net/igo/
International	Asian Disaster Reduction Center	http://www.adrc.asia/
International	EU Emergency Response Coordination Center	http://ec.europa.eu/echo/what/civil-protection/emergency-response-coordination-centre-ercc_en

Bibliography

1. Adamski, S., 2013a. Statement of Shayne Adamski, Senior Manager of Digital Engagement, Federal Emergency Management Agency, U.S. Department of Homeland Security, Before the Committee on Homeland Security Subcommittee on Emergency Preparedness, Response and Communications, U.S. House of Representatives, Washington, DC, July 9, 2013,
[<http://docs.house.gov/meetings/HM/HM12/20130709/101047/HHRG-113-HM12-Wstate-AdamskiS-20130709.pdf>](http://docs.house.gov/meetings/HM/HM12/20130709/101047/HHRG-113-HM12-Wstate-AdamskiS-20130709.pdf).
2. Adamski, S., 2013b. A. Interview with author conducted on July 23, 2013.
3. Adelson, J., 2015. New Orleans area population still growing post-Katrina, but slowly. The Advocate. March 26. [<http://bit.ly/1RZKFdl>](http://bit.ly/1RZKFdl).
4. Aitsi-Selmi, A., Murray, V., 2015. Disaster risk reduction: a cross-cutting necessity in the SGD's. Brief for GSDR 2015. [<http://bit.ly/1WNNhiX>](http://bit.ly/1WNNhiX).
5. American Red Cross, 2011. How do you use social media in emergencies. [<http://redcrosschat.org/2011/08/24/how-do-you-use-social-media-in-emergencies>](http://redcrosschat.org/2011/08/24/how-do-you-use-social-media-in-emergencies) August 2011.
6. American Red Cross, 2012a. More Americans using mobile apps in emergencies. August 31, 2012. [<http://www.redcross.org/news/press-release/More-Americans-Using-Mobile-Apps-in-Emergencies>](http://www.redcross.org/news/press-release/More-Americans-Using-Mobile-Apps-in-Emergencies).
7. American Red Cross, 2012b. More agencies using mobile apps in emergencies. [<http://www.redcross.org/news/press-release/More-Americans-Using-Mobile-Apps-in-Emergencies>](http://www.redcross.org/news/press-release/More-Americans-Using-Mobile-Apps-in-Emergencies) August 2012.
8. American Red Cross, Disaster operations center visitor's guide.
9. Ames, B., Brown, W., Devaragan, S., Izquierdo, A., 2001. Macroeconomic Policy and Poverty Reduction. International Monetary Fund, Washington, DC.
10. Appleby, L., 2012. Appleby, L., 2013 Connecting the last mile: The role of communications in the Great East Japan earthquake. Inter News.
[<http://www.internews.org/sites/default/files/resources/InternewsEurop>](http://www.internews.org/sites/default/files/resources/InternewsEurop)
11. Ashwood, A., 2013. Albert Ashwood, Chairman, NEMA Legislative Committee Director, Oklahoma Department of Emergency Management, Statement for the Record on Behalf of the National Emergency management Association (NEMA), Submitted to the House Committee on Homeland Security Subcommittee on Emergency Preparedness, Response, and Communications United States House of Representatives, "Emergency MGMT 2.0: How #SocialMedia & New Tech are Transforming Preparedness, Response, & Recovery #Disasters

#Part2 #Govt/NGOs," July 9, 2013.

12. Asia News Network, 2016. Women disproportionately affected by disaster. Experts Say. Emergency Management Magazine. May 17. <<http://bit.ly/20FwM6W>>.
13. ASIS. 2013. Groundbreaking Study Finds US Security Industry to be \$350 Billion Market. Press Release. August 12. <<http://bit.ly/28YIozD>>.
14. Australian Emergency Management Institute, 2011. Community Recovery Handbook 2. Australian Emergency Management Handbook Series. Commonwealth of Australia.
15. Bagli, C.V., 2002. Seeking safety, downtown firms are scattering, New York Times, p. A-1.
16. Bakhet O. *Linking relief to development* UNDP Rwanda 1998.
17. Ballard, M., 2007. Officials urge federal role in hurricane insurance. The Advocate Online.
18. Barrantes, S.A., Rodriguez, M., Perez, R., 2009. Information Management and Communication in Emergencies and Disasters. Manual for Disaster Response Teams. Pan American Health Organization (PAHO) <<http://bit.ly/22pV5XZ>>.
19. Barthel, M., 2016a. Newspapers: fact sheet. Pew Research Center: Journalism & Media. June 15, 2016. <<http://www.journalism.org/2016/06/15/newspapers-fact-sheet/>>.
20. Barthel, M., 2016b. 5 key takeaways about the state of the news media in 2016. Pew Research Center: Journalism & Media. June 15, 2016. <<http://www.pewresearch.org/fact-tank/2016/06/15/state-of-the-news-media-2016-key-takeaways/>>.
21. Barthel, M., Shearer, E., Gottfried, J., Mitchell, A., 2015. The evolving role of news on Twitter and Facebook. Pew Research Center; Journalism & Media. July 14, 2015. <<http://www.journalism.org/2015/07/14/the-evolving-role-of-news-on-twitter-and-facebook/>>.
22. Bar-Tur, Y., 2013. Mashable. "Boston police schooled us all on schooled us all on social media." April 22, 2013. <<http://mashable.com/2013/04/22/boston-police-social-media/>>.
23. Bass, F., 2012. Katrina comeback makes New Orleans fastest growing city. Bloomberg News.<<http://www.bloomberg.com/news/2012-06-28/katrina-comeback-makes-new-orleans-fastest-growing-city.html>>.
24. Baylon, J., 2012. Hurricane Sandy: authorities use social media to keep people informed. digital first media. October 29, 2012. Accessed on the San Jose Mercury News website. <http://www.mercurynews.com/breaking-news/ci_21880815/hurricane-sandy-social-media>.
25. BBC News, 2008. Burmese blog the cyclone. May 8, 2008. <<http://news.bbc.co.uk/2/hi/asia-pacific/7387313.stm>>.
26. Beaumont, P., 2011. The Truth about Twitter, Facebook and the uprisings in the Arab world. The Guardian. <<http://www.guardian.co.uk/world/2011/feb/25/twitter-facebook-uprisings-arab-libya>>.

27. Becker, C., 2009. Disaster recovery: a local government responsibility. *Public Management*. International City-County Management Association (ICMA). 2009. <<http://bit.ly/292gwKh>>.
28. Beckerman, M., 2013. Testimony of Michael Beckerman President and CEO of the Internet Association before the United States House of Representatives Committee on Homeland Security, Subcommittee on Emergency Preparedness, Response and Communication. "Emergency MGMT 2.0: How #SocialMedia & New Tech are Transforming Preparedness, Response, & Recovery #Disasters #Part1 #Privatesector". June 4, 2013. <<http://docs.house.gov/meetings/HM/HM12/20130604/100924/HHRG-113-HM12-Wstate-BeckermanM-20130604.pdf>>.
29. Blanchfield, M., 2012. Haitian recovery will take 30 years: U.S. envoy. Canada Haiti Action Network. <<http://canadahaitiaction.ca/content/haitian-recovery-will-take-30-years-us-envoy>>.
30. Bowman S, Willis C. *We Media: How Audiences Are Shaping the Future of News and Information* The Media Center at the American Press Institute 2003.
31. Breslin, S., 2016. Is climate change making wildfire seasons worse? The Weather Channel. April 7. <<http://wxch.nl/1SFVAGI>>.
32. Brooks, S., 2013. Statement of Chairman Susan Brooks (R-IN) Subcommittee on Emergency Preparedness, Response, and Communications, "Emergency MGMT 2.0: How #SocialMedia & New Tech are Transforming Preparedness, Response, & Recovery #Disasters #Part2 #Govt/NGOs", July 9, 2013 Remarks as Prepared. <http://homeland.house.gov/sites/homeland.house.gov/files/07-09-13-Brooks-Open_0.pdf>.
33. Brown, P., 2012. Mindjet. Hurricane #Sandy: socializing traditional media. Posted November 12, 2012. <<http://blog.mindjet.com/2012/11/hurricane-sandy-socializing-traditional-media>>.
34. Burma News, 2008. Burmese journals face restriction on cyclone coverage. <<http://www.mizzima.com/component/content/article/506-burmese-journals-face-restrictions-on-cyclone-coverage.html>>.
35. Burns, A., 2013. Social media versus the floods. CCI: Arc Centre for Excellence for Creative Industries and Innovation. <<http://www.cci.edu.au/about/media/social-media-vs-the-floods>>.
36. Burke R. *Counter Terrorism for Emergency Responders* Boca Raton, FL: CRC/Lewis Publishers; 2000.
37. CAEP, 2013. City assisted evacuation plan. City of New Orleans. <<http://new.nola.gov/ready/city-assisted-evacuation/>>.
38. Carafano, J.J., 2007. U.S. Thwarts 19 terrorist attacks against America since 9/11. Heritage Foundation. <<http://www.heritage.org/Research/HomelandDefense/bg2085.cfm>>.
39. Catone, J., 2007. Online citizen journalism now undeniably mainstream.

ReadWriteWeb.

<http://www.readwriteweb.com/archives/online_citizen_journalism_ma

40. CDC, 2012. Crises and Emergency Risk Communications Manual, second ed. <http://emergency.cdc.gov/cerc/pdf/CERC_2012edition.pdf>.
41. Center for Disaster Management and Humanitarian Assistance, n.d. NGOs and disaster response who are these guys and what do they do. Anyways?<www.cdmha.org/ppt/%20presentation.ppt>.
42. Centers for Disease Control and Prevention, 2013. Cholera in Haiti. Traveler's Health.<<http://wwwnc.cdc.gov/travel/notices/watch/haiti-cholera.htm>>.
43. Chaffey, D., 2016. Mobile marketing statistics compilation. Smart Insights. April 27, 2016. <<http://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketing-statistics/>>.
44. City of Oakland, 2009. Long-Term Disaster Recovery Plan. Association of Bay Area Governments. June 30.
45. City of Summit Office of Emergency Management, Undated. Hurricane Sandy October 2012 After Action Report.
<<http://www.cityofsummit.org/filestorage/8242/8302/10255/11232/HURR>>.
46. Clinton, H.R., 2010. Remarks on Internet freedom. January 21, 2010
<<http://www.state.gov/secretary/rm/2010/01/135519.htm>>.
47. CNN Library, 2015. Hurricane Sandy fast facts.
<<http://cnn.it/1WQ5A67>>.
48. Cohen, H., 2012. Stay on top of hurricane season with apps, email and web. Miami Herald. May 31, 2012.
<<http://www.miamiherald.com/2012/05/31/2825810/stay-on-top-of-hurricane-season.html>>.
49. Cohen, S.E., 2013. Sandy marked a shift in social media use in disasters. Emergency Management. March 7, 2013.
<<http://www.emergencymgmt.com/disaster/Sandy-Social-Media-Use-in-Disasters.html?page=3>>.
50. Conca, J., 2016. After five years, what is the cost of Fukushima? Forbes. March 10. <<http://onforb.es/1qCPdhb>>.
51. Congress Daily, 2007. Estimated price tag of security causes stir, Government Executive Magazine, Federal Briefing.
52. Congressional Research Service, 2006. Federal emergency management policy changes after Hurricane Katrina, a summary of statutory provisions.<<http://www.fas.org/sgp/crs/homesec/RL33729.pdf>>.
53. Connell, C., 2010. America. Gov. "In Haiti's time of need, Texting "4636" became a lifeline." February 19, 2010.
<<http://www.america.gov/st/english/2010/February/20100219131612berehelleK5.066395e-06.html>>.
54. Cooper, G., 2007. AlterNet. "Burma's bloggers show power of citizen journalism in a crises."
<<http://permalink.gmane.org/gmane.culture.region.india.zestmedia/3925>>.
55. Coppola D. *Introduction to International Disaster Management* Burlington, MA: Elsevier; 2006.

56. Coppola D. *Introduction to International Disaster Management* Burlington, MA: Elsevier; 2015.
57. Coppola D, Harrald JR, Yeletaysi S. *Assessing the Financial Impacts of the World Trade Center Attacks on Publicly Held Corporations* The Institute for Crisis, Disaster, and Risk Management The George Washington University 2004.
58. Coyle D. *The United Nations and How It Works* New York, NY: Columbia University Press; 1969.
59. CRS, 2016. An examination of federal disaster relief under the budget control act. R42352. <<http://bit.ly/29bqDN4>>.
60. Delo, C., 2012. Hurricane Sandy boosts local online news brands. <<http://adage.com/article/digital/sandy-boosts-local-online-news-brands/238049/>>.
61. Department of Defense, CCRP, n.d. The complex process of responding to crisis. Available from: <www.dodccrp.org/ngoCh2.html>.
62. Department of Homeland Security, 2007. DHS proposed budget 2008. Available from: <http://www.dhs.gov/xlibrary/assets/budget_bib-fy2008.pdf> 2007.
63. Desilver, D., 2016. 5 facts about Twitter at age 10. Pew Research Center. March 18, 2016. <<http://www.pewresearch.org/fact-tank/2016/03/18/5-facts-about-twitter-at-age-10/>>.
64. DHS Office of the Inspector General, 2005. Audit of FEMA's individuals and households program in Miami-Dade County, Florida, for Hurricane Frances OIG-05-20. <http://www.oig.dhs.gov/assets/Mgmt/OIG_05-20_May05.pdf> 2005.
65. DHS, 2014. Unaccompanied children on the southwest border. Department of Homeland Security. June 2014. <<https://www.dhs.gov/unaccompanied-children>>.
66. DHS, 2016b. Virtual Social Media Working Group (VSMWG). Webpage. <<https://www.dhs.gov/science-and-technology/vsmwg>> (accessed 16.06.16.).
67. DHS. 2016a. Overview of the national planning frameworks. Department of Homeland Security. June, 2016. <http://www.fema.gov/media-library-data/1466016288879-63f68f6dced909f08cf8687deaa8e718/Overview_of_National_Planning_Frameworks.pdf>.
68. DHS. 2016c. VSMWG from concept to reality: Operationalizing social media for preparedness, response and recovery. Department of Homeland Security. April 2016. <<https://www.dhs.gov/sites/default/files/publications/VSMWG%20-%20From%20Concept%20to%20Reality%20-%20Operationalizing%20Social%20Media.pdf>>.
69. Disasters Emergency Committee, 2013. Haiti earthquake facts and figures. Retrieved on May 13. 2013. <<http://www.dec.org.uk/haiti-earthquake-facts-and-figures>>.
70. DOT, 2006, Catastrophic hurricane evacuation plan evaluation: A report to congress. U.S. Department of Transportation: Federal Highway

- Administration. June 1, 2006.
<<http://www.fhwa.dot.gov/reports/hurricanevacuation/bibliography4.htm>>
71. Drye, W., 2012. A timeline of Hurricane Sandy's path of destruction. National Geographic. November 12. <<http://bit.ly/1SmncEP>>.
72. Duggan, M., 2015. The demographics of social media users. Pew Research Center: Internet, Science and Tech. August 19, 2015.
<<http://www.pewinternet.org/2015/08/19/the-demographics-of-social-media-users/>>.
73. Duggan, M., Brenner, J., 2013. Pew Research Center for the People & the Press, Internet & American Life Project. "The Demographics of Social Media Users -2012." February 14, 2013.
<http://www.pewinternet.org/~media//Files/Reports/2013/PIP_SocialMediaUsers.pdf>.
74. Ebola Educational Materials.
<<http://www.nyc.gov/html/doh/html/diseases/ebola-educational.shtml>> (accessed 04.11.15.).
75. EMAC, 2016. Emergency management assistance compact. Website:
<<http://www.emacweb.org/index.php?limitstart=0>> (accessed July 04.07.16.).
76. Emergency Management Institute, 2001–2002. Catalog of activities, Emmitsburg, MD. Available from: <www.fema.gov>.
77. Erickson, P.A., 2012. Emergency response planning for corporate and municipal managers. Facebook, 2012.
<<https://www.facebook.com/DisasterRelief>>.
78. Everbridge, 2013. The social media gap in crisis communications. Everbridge.com. <<http://www.everbridge.com/everbridge-study-finds-58-of-organizations-lack-social-media-strategy-during-crises/>> (accessed 31.07.13.).
79. Fan, M., 2008. The Washington Post. Citizen groups step up in China. May 29, 2008. <http://www.washingtonpost.com/wp-dyn/content/article/2008/05/28/AR2008052803398_pf.html>.
80. Fears, D., 2013. Drought threatens to halt critical barge traffic on Mississippi. The Washington Post. <<http://wapo.st/2g8XSmn>>.
81. FEMA FEMA. Website: <www.fema.gov>.
82. FEMA Hurricane Sandy After Action Report, 2013. July 1, 2013.
<https://s3-us-west-1.amazonaws.com/dam-production/uploads/20130726-1923-25045-7442/sandy_fema_aar.pdf>.
83. FEMA. *Federal Emergency Management Agency Office of the Inspector General FEMA's Disaster Management Program: A Performance Audit after Hurricane Andrew H-01-93* Washington, DC: FEMA; 1993.
84. FEMA. *Report on Costs and Benefits of Natural Hazard Mitigation* Washington, DC: FEMA; 1997b.
85. FEMA. *FEMA Emergency Information Field Guide (condensed)* Washington, DC: FEMA; 1998.
86. FEMA. *FEMA, Federal Response Plan* Washington, DC: FEMA; 1999.
87. FEMA. *FEMA, International Technical Assistance Activities of the United States Federal Emergency Management Agency* Washington, DC: FEMA;

- 2001.
88. FEMA, 2007a. Catalog, Emergency Management Institute. Available from: <<http://training.fema.gov/emicourses/emicatalog.asp>>.
 89. FEMA. *FEMA, National Incident Management System: FEMA 501/Draft August 2007* Washington, DC: FEMA; 2007b.
 90. FEMA, 2007c. Homeland security establishing new advisory council, press release.
 91. FEMA, 2008a. National incident management system.
<http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf>.
 92. FEMA, 2008b. National Incident Command System (NIMS).
<<http://www.fema.gov/national-incident-management-system>>.
 93. FEMA, 2009. NIMS fact sheet.
<<http://www.fema.gov/pdf/emergency/nims/NIMSFactSheet.pdf>>.
 94. FEMA, 2010a. Developing and maintaining emergency operations plans. Version 2.0. November. <<http://www.fema.gov/library/viewRecord.do?&id=5697>>.
 95. FEMA, 2010b. Incident management assistance teams. FEMA fact sheet.
<http://www.fema.gov/pdf/media/factsheets/2010/imat_fact_sheet_10_0>.
 96. FEMA, 2011a. A whole community approach to emergency management: principles, themes and pathways for action. December, 2011. <<http://www.fema.gov/whole-community>>.
 97. FEMA, 2011b. National disaster recovery framework: strengthening disaster recovery for the nation. <<http://bit.ly/1GOcAeF>>.
 98. FEMA, 2012. New Jersey – Hurricane Sandy. Disaster Declaration 4086. October 30. <<http://1.usa.gov/23TPzBz>>.
 99. FEMA, 2013a. FEMA Declaration Process Fact Sheet
<<http://www.fema.gov/declaration-process>>.
 100. FEMA, 2013b. College list.
<<http://www.training.fema.gov/emiweb/edu/collegelist>>.
 101. FEMA, 2013c. National exercise program (NEP).
<<http://www.fema.gov/national-exercise-program#PrincipalsObjectives>>.
 102. FEMA, 2013d. National prevention framework.
<<http://www.fema.gov/library/viewRecord.do?id=7358>>.
 103. FEMA, 2015a. US Emergency Management (By Type) & Homeland Security Collegiate Programs -- Last Modified: 31 August 2015.
<<https://training.fema.gov/hiedu/collegelist>> (accessed 22.06.16.).
 104. FEMA, 2015b. National preparedness goal. Federal Emergency Management Agency. October 2, 2015.
<<https://www.fema.gov/national-preparedness-goal>>.
 105. FEMA, 2015c. National preparedness. Federal Emergency Management Agency. December 23, 2015. <<https://www.fema.gov/national-preparedness>>.
 106. FEMA, 2016a. National preparedness report. Federal Emergency Management Agency. May 31, 2016. <<https://www.fema.gov/national-preparedness-report>>.

107. FEMA, 2016b. National Response Framework, third ed. June 2016. <http://www.fema.gov/media-library-data/1466014682982-9bcf8245ba4c60c120aa915abe74e15d/National_Response_Framework3rd>
108. FEMA, 2016c. Texas flooding: rumor control. June 9, 2015. <<https://www.fema.gov/disaster/4223/updates/texas-flooding-rumor-control>>.
109. FEMA, 2016d. Whole community. Federal Emergency Management Agency (FEMA). <<https://www.fema.gov/whole-community>> (accessed 22.06.16.).
110. FEMA, 2016e. Fiscal Year 2016 Homeland Security Grant Program. Updated February 16, 2016. <<https://www.fema.gov/fiscal-year-2016-homeland-security-grant-program>>.
111. FEMA, 2016f. About PS-Prep™. Federal Emergency Management Agency. <<https://www.fema.gov/about-ps-preptm>> (accessed 24.06.16.).
112. FEMA, 2016g. Flood facts. FloodSmart Website. Resources. <<http://1.usa.gov/1mF8aw3>>.
113. FEMA.gov, 2013. Hurricane Sandy YouTube videos. feed://www.fema.gov/medialibrary/tags/feed_video/2590 (accessed 28.08.13.).
114. Ferrara, L., 2007. AP's 'NowPublic' Initiative, Remarks at the Associated Press Managing Editors' Conference, Fast Forward to the Future.
115. Florida Department of Community Affairs, 2010. Post-Disaster Redevelopment Planning: A Guide for Florida Communities. Florida Division of Emergency Management. <<http://bit.ly/1Ob8tZE>>.
116. Flynn, K., 2001. After the attack: the firefighters; department's cruel toll: 350 comrades. New York Times, Section: National Desk.
117. Fox News, 2009. Suspect charged in thwarted Terror plot aboard detroit-bound jet. <<http://www.foxnews.com/story/0,2933,581180,00.html>>.
118. Fraustino JD, Liu B, Jin Y. *The National Consortium for the Study of Terrorism and Responses to Terrorism* (START). "Social Media Use during Disasters: A Review of the Knowledge Base and Gaps," Final Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S Department of Homeland Security College Park, MD: START; 2012a; 2012. <http://www.start.umd.edu/start/publications/START_SocialMediaUsed>
119. Fraustino JD, Liu B, Jin Y. *The National Consortium for the Study of Terrorism and Responses to Terrorism* (START). "Social Media Use during Disasters: A Review of the Knowledge Base and Gaps," Final Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S Department of Homeland Security College Park, MD: START; 2012b; 2012. <http://www.start.umd.edu/start/publications/START_SocialMediaUsed>
120. Fry, K., 2004. Disasters and television. Encyclopedia of Television, Museum of Broadcast Communications, edited by Horace Newcomb.
121. Gandel, S., 2002. Consultants push wall street to leave; downtown's

- losses are huge, but some companies shrug off fears, concentrate workers in midtown. Crain's New York Business.
122. Gilbert R, Kreimer A. *Learning from the World Bank's Experience of Natural Disaster Related Assistance* Washington, DC: The World Bank; 1999.
 123. Gilbert, A., 2002. Out of the Ashes, Information Week. Available from: <<http://www.informationweek.com/out-of-the-ashes/6500774>>.
 124. Gilbert, A., 2012. Social media and Hurricane Sandy. Digital Ethos. Posted November 15, 2012. <<http://digitaletbos.org/social-media-and-hurricane-sandy/>>.
 125. Gillmor, D., 2004. O'Reilly Media Inc. "We the Media: Grassroots Journalism by the People, for the People". <<http://oreilly.com/openbook/wemedia/book/>>.
 126. Gillmor, D., 2006. We the Media: Grassroots Journalism by the People, for the People. O'Reilly Media Inc.
 127. Gillmor, D., Hattotuwa, S., 2007a. Citizen journalism and humanitarian aid: boon or bust? ICT for Peacebuilding. <<http://ict4peace.wordpress.com/2007/07/30/citizen-journalism-and-humanitarian-aid-bane-or-boon/>>.
 128. Gillmor, D., Hattotuwa, S., 2007b. ICT for Peacebuilding. "Citizen journalism and humanitarian aid: boon or bust?". <<http://ict4peace.wordpress.com/2007/07/30/citizen-journalism-and-humanitarian-aid-bane-or-boon/>>.
 129. Giridharadas, A., 2010. The New York Times. "Currents; taking stock of the testimony of the crowd." March 13, 2010. <<http://query.nytimes.com/gst/fullpage.html?res=9B04E1D9103AF930A25750C0A9669D8B63&sec=&spon=&pagewant>
 130. Glaser, M., 2006. MediaShift PBS. "Your guide to citizen journalism." September 27, 2006. <<http://www.pbs.org/mediashift/2006/09/your-guide-to-citizen-journalism270>>.
 131. Glaser, M., 2007. MediaShift. "California wildfire coverage by local media, blogs, Twitter, Maps and more." <http://www.pbs.org/mediashift/2007/10/the_listcalifornia_wildfire_co_1>. October 25.
 132. Glennon, B., 2013. The Chicago Policy Review. "The role of technology in crisis management and how it could be done better." <<http://chicagopolicreview.org/2013/05/07/the-role-of-technology-in-crisis-management-and-how-it-could-be-done-better/>>.
 133. Global Voices Online, 2008a. Myanmar cyclone 2008. <<http://www.globalvoicesonline.org/specialcoverage/myanmar-cyclone-2008/>>.
 134. Global Voices Online, 2008b. Si chuan earthquake 2008. <<http://www.globalvoicesonline.org/specialcoverage/sichuan-earthquake-2008/>>.
 135. GlobalCorps, n.d. OFDA's evolving role. Available from: <www.globalcorps.com/ofda/ofdarole.html>.
 136. Gosnell, A., 2015. Social media's role in disaster response expands.

- Emergency Management. May 5, 2015.
<<http://www.emergencymgmt.com/disaster/Social-Medias-Role-Disaster-Response-Expands.html>>.
137. Grimmett, R., 2006. 9/11 commission recommendations: implementation status. Congressional Research Service, Report RL33742.
138. Guerriero, M., 2013. The New Yorker. "Closing the app gap: Google v. Apple." June 6, 2013.
<<http://www.newyorker.com/online/blogs/newsdesk/2013/06/google-apple-apps-mobile-downloads-gap.html>>.
139. Hattotuwa, S., 2007. TVA Asia Pacific and UNDP Regional Centre in Bangkok. "Who is afraid of citizen journalists? Communicating disasters."
<http://www.tveap.org/disastercomm/Chapters_in_seperate_PDFs/Chap14.pdf>.
140. Hawley, C., 2002. Globalization and Sept. 11 Are Pushing Wall Street off Wall Street, Analysts Say. Associated Press State and Local Wire, February 1, 2002, State and Regional Section, in Lexis-Nexis Universe: World Trade Center, Firm and Tenant.
141. Haynes, H.J.G., 2015. Fire loss in the United States during 2015. National Fire Protection Association. <<http://bit.ly/1SwwjOS>>.
142. Hedges C. *Monday Counting Losses, Department Rethinks Fighting Every Fire* New York Post 2001.
143. Heinzelman, J., Waters, C., 2010. U.S. Institute of Peace. Crowdsourcing crisis information in disaster affected Haiti. October, 2010.
<<http://bit.ly/2gmQkj9>>.
144. Hodge, N., 2010. Wired. Texts, tweets saving Haitians from the rubble. January 21, 2010. <www.wired.com/.../2010/.../texts-tweets-saving-haitians-from-the-rubble>.
145. Hollis, M., 2007. Florida calling for Catastrophe Fund. Los Angeles Times, part A, p. 17.
146. House Homeland Security Committee, 2014. The Road to Boston: Counterterrorism Challenges and Lessons from the Marathon Bombings. US House of Representatives. <<http://1.usa.gov/1nxINgC>>.
147. Houston, A., 2001a. Crisis communications: confused messages spur switch to sole spokesman. PR Week, p. 11.
148. Houston, A., 2001b. Crisis communications: the readiness is all: how the red cross responded, PR Week, p. 13.
149. Hunt, P., 2012. Mindjet. Hurricane #Sandy: socializing traditional media. November 12, 2012. <<http://blog.mindjet.com/2012/11/hurricane-sandy-socializing-traditional-media/>>.
150. IFRC, 2010. Strategy 2020: saving lives. Changing Minds.
<<http://www.ifrc.org/Global/Publications/general/strategy-2020.pdf>>.
151. Insurance Information Institute, 2016. Hail. III Website:
<<http://bit.ly/1Q03qsU>>.
152. Intergovernmental Panel on Climate Change, 2001. Special issues in developing countries. Available from: <<http://www.ipcc.ch/pdf/climate->

- [changes-2001/synthesis-spm/synthesis-spm-en.pdf](http://www.ipcc.ch/report/ar5/synthesis-report/).
- 153. Intergovernmental Panel on Climate Change, 2012. Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. Cambridge University Press. <bit.ly/1TVQ4lh>.
 - 154. International Bank for Reconstruction and Development, 2012. Disaster Risk Management and Multilateral Development Banks: An Overview. Global Facility for Disaster Reduction and Recovery. Washington, DC.
 - 155. International Monetary Fund, 2001. IMF emergency assistance related to natural disasters and post-conflicts Situations: a factsheet.
<<http://www.imf.org/external/np/exr/facts/pdf/conflict.pdf>>.
 - 156. International Recovery Platform (IRP), 2010. Guidance Note: Governance. IRP Guidance Note Series. Kobe.
 - 157. International Recovery Platform (IRP), 2011. Pre-Disaster Recovery Planning. IRP Guidance Note Series. <bit.ly/1kF7u9S>.
 - 158. Iovenko, C., 2015. Toxic dust from a dying California Lake. The Atlantic. November 9. <<http://theatlantic.com/1SM3L4n>>.
 - 159. IPCC. Summary for policymakers. In: Stocker TF, Qin D, Plattner G-K, Tignor M, Allen SK, Boschung J, Nauels A, Xia Y, Bex V, Midgley PM, eds. *Climate Change 2013: The Physical Science Basis Contribution of Working Group I to Firth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press; 2013.
 - 160. Kailes, J.I., Enders, A., 2007. Moving beyond "special needs" -a function-based framework for emergency management and planning. Journal of Disability Policy Studies, 17/NO. 4/2007. 2007.
<<http://www.jik.com/KailesEndersbeyond.pdf>>.
 - 161. Kakutani, M., 2013. New York Times. "Unraveling Boston Suspects' Online Lives, Link by Link." April 23, 2013.
<http://www.nytimes.com/2013/04/24/us/unraveling-brothers-online-lives-link-by-link.html?pagewanted=all&_r=5&>.
 - 162. Karter MJ. *Fire Loss in the United States 2008* National Fire Protection Association Quincy, MA: Fire Analysis and Research Division; 2008.
 - 163. Karter MJ. *Fire Loss in the United States During 2011* National Fire Protection Association Fire Analysis and Research Division 2012;
<<http://www.nfpa.org/assets/files/pdf/os.fireloss.pdf>>.
 - 164. Keller, J., 2013. Bloomberg Businessweek Technology. "How Boston police won the Twitter wars during the marathon bomber hunt." April 26, 2013. <<http://www.businessweek.com/articles/2013-04-26/how-boston-police-won-the-twitter-wars-during-bomber-hunt#p2>>.
 - 165. Kettl DF. *The Worst Is Yet to Come: Lessons from September 11 to Hurricane Katrina* Fels Institute of Government, University of Pennsylvania 2005.
 - 166. Laituri M, Kodrich K. *On Line Disaster Response Community: People as Sensors of High Magnitude Disasters Using Internet GIS* Colorado State University 2008.
 - 167. Madison County, 2009. Emergency Operations Plan. Madison County, NC. <bit.ly/2gKxmB0>.
 - 168. Mancino K. *Development Relief: NGO Efforts to Promote Sustainable Peace*

- and Development in Complex Humanitarian Emergencies* Washington, DC: Interaction; 2001.
169. Mann, S.A., Gong, M., 2015. 3 trends in US wildfires. World Resources Institute (WRI). November 9. <<http://bit.ly/23r6FTF>>.
 170. Maron, Dina Fine, 2013. How social media is changing disaster response. *Scientific American*. June 7, 2013. <<http://www.scientificamerican.com/article.cfm?id=how-social-media-is-changing-disaster-response>>.
 171. Mastroianni, B., 2016. USGS: millions at risk from man-made earthquakes. CBS News. March 28. <<http://cbsn.ws/1T880aK>>.
 172. May, A.L., 2006. The Aspen Institute, "First informers in the disaster zone: the lessons of Katrina." <<http://www.aspeninstitute.org/publications/first-informers-disaster-zone-lessons-katrina>>.
 173. Maynard, K., n.d. Healing communities in conflict: international assistance in complex emergencies. Available from: <www.ciaonet.org/book/maynard/maynard07.html>.
 174. McKinsey and Company. *Improving NYPD Emergency Preparedness and Response* Author 2002.
 175. Meier, P., 2012. National Geographic Explorer's Journal. How crisis mapping save lives in Haiti. July 2, 2012. <<http://newswatch.nationalgeographic.com/2012/07/02/crisis-mapping-haiti/>>.
 176. Mileti DS. *Disasters by Design: A Reassessment of Natural Hazards in the United States* Washington, DC: John Henry Press; 1999.
 177. Mitchell JK. *Crucibles of Hazard: Mega-Cities and Disasters in Transition* New York, NY: United Nations University Press; 1999.
 178. Monroe County, F.L., 2009. Recovery plan. <<http://www.monroecountyem.com/DocumentCenter/Home/View/11>>.
 179. Morse, R., 2010. How Haitian writer Richard Morse gave an hourly account of earthquake through Twitter. *The Observer*. <<http://www.theguardian.com/world/2010/jan/17/haiti-earthquake-richard-morse-twitter>>.
 180. Mullins, J., 2010. New Scientist. How crowdsourcing is helping in Haiti. January 27, 2010. <<http://www.newscientist.com/article/mg20527453.600-how-crowdsourcing-is-helping-in-haiti.html>>.
 181. Munich Re, 2012. Review of natural catastrophes in 2011: earthquakes result in record loss year. Munich Re Press Release. January 4. <<http://bit.ly/1RFUeiP>>.
 182. Munro, R., 2013. Crowdsourcing and the crisis-affected community Lessons learned and looking forward from Mission 4636. <<http://robertmunro.com/mission4636.pdf>> (accessed 30.07.13.).
 183. Mussenden, S., 2013. Interviewed by Kim Haddow, June 27, 2013.
 184. Nakamura, D., 2011. World Bank Estimates Japan Damage up to \$235 billion. *The New York Times*. March 21.

185. National Association of Counties, 2004. *Counties and Homeland Security: Policy Agenda to Secure the People of America's Counties*.
186. National Emergency Management Association. *White Paper on Domestic Preparedness* Washington, DC: NEMA; 2001.
187. National Emergency Management Association, 2002. NEMA Reports on State Homeland Security Structures.
188. National Fire Protection Association, 2006. Fire loss in the U.S. during 2005. NFPA Report. Available from:
[<http://www.nfpa.org/assets/files/PDF/OS.fireloss.pdf>](http://www.nfpa.org/assets/files/PDF/OS.fireloss.pdf).
189. National Governor's Association (NGA), 2002. Center for best practices. issue brief.
190. National Governor's Association (NGA), 2014. Overview of State Homeland Security Governance Structures. [<http://bit.ly/2956ASk>](http://bit.ly/2956ASk).
191. National Governors Association (NGA), 2007. Letter to Senator Leahy and Senator Bond. Available from:
[<http://www.nga.org/cms/home/federal-relations/nga-letters/archived-letters--2007/col2-content/main-content-list/title_february-23-20.html>](http://www.nga.org/cms/home/federal-relations/nga-letters/archived-letters--2007/col2-content/main-content-list/title_february-23-20.html).
192. National Interagency Fire Center, 2009. Fire information—wildland fire statistics. NIFC Website:
[<http://www.predictiveservices.nifc.gov/intelligence/2009_statsumm/2009_statsumm.htm>](http://www.predictiveservices.nifc.gov/intelligence/2009_statsumm/2009_statsumm.htm)
193. National League of Cities, 2015. Local Government Authority. NLC Website. Accessed July 2015. [<http://bit.ly/291qDOR>](http://bit.ly/291qDOR).
194. Natsios AS. *U.S Foreign Policy and the Four Horsemen of the Apocalypse* Westport, CT: Praeger Publishers; 1997.
195. New Jersey Office of Emergency Management, 2013.
[<https://twitter.com/ReadyNJ>](https://twitter.com/ReadyNJ) (accessed 28.08.13.).
196. New York Magazine, 2009 Death, destruction, charity, salvation, war, money, real estate, spouses, babies, and other September 11 Statistics. Website: [<http://nymag.com/news/articles/wtc/1year/numbers.htm>](http://nymag.com/news/articles/wtc/1year/numbers.htm).
197. New York State Division of Homeland Security and Emergency Services, 2013. Twitter messages. [<https://twitter.com/NYSDHSES>](https://twitter.com/NYSDHSES) (accessed 28.08.13.).
198. Ngak, C., 2012. CBS News. Social media a news sources and a tool during Superstorm Sandy. October 30, 2012.
[\(<http://www.cbsnews.com/8301-205_162-57542474/social-media-a-news-source-and-tool-during-superstorm-sandy/>\).](http://www.cbsnews.com/8301-205_162-57542474/social-media-a-news-source-and-tool-during-superstorm-sandy/)
199. NOAA, 2006. The Northeast Snowfall Impact Scale (NESIS). Available at the NOAA website:
[<http://www.ncdc.noaa.gov/oa/climate/research/snow-nesis>](http://www.ncdc.noaa.gov/oa/climate/research/snow-nesis).
200. NOAA, 2013. National Climate Data Center. Billion dollar weather/climate disasters. [<http://www.ncdc.noaa.gov/billions/events>](http://www.ncdc.noaa.gov/billions/events) (accessed 31.07.13.).
201. NYC Hurricane Sandy After Action Report, 2013. Deputy Mayor Linda I. Gibbs, Co-Chair Deputy Mayor Caswell F. Holloway, Co-Chair. May 2013.
[<http://www.nyc.gov/html/recovery/downloads/pdf/sandy_aar_5.2.13.pdf>](http://www.nyc.gov/html/recovery/downloads/pdf/sandy_aar_5.2.13.pdf)

202. Ocean County, NJ., 2015. Ocean County long-term community recovery plan. <<http://togethernorthjersey.com/wp-content/uploads/2015/03/OC-LTCR-Plan-Final.pdf>>.
203. Office for the Coordination of Humanitarian Affairs, 2005 Office for the coordination of humanitarian affairs, 2007. OCHA Organigramme. Available from: <<http://www.unocha.org/ochain/2007/ochaorg.htm>>.
204. Office for the Coordination of Humanitarian Affairs, Coordination of humanitarian response. Available from: <www.reliefweb.int/ocha_ol/programs/response/service.html>.
205. Office for the Coordination of Humanitarian Affairs, n.d. Information Summary on military and civil defence assets (MCDA) and the Military and civil defence unit (MCDU).
206. Office of Domestic Preparedness, 2007. ODP grant programs. Available at the U.S. Department of Justice website: <<http://www.ojp.usdoj.gov/odp>>.
207. Office of Homeland Security, 2002 State and local actions for Homeland Security, 2002. Available from: <www.whitehouse.gov/homeland/stateandlocal>.
208. Office of the Assistant Secretary of the Army for Civil Works, 2016. Flood risk management. US Army Website: <<http://1.usa.gov/209MYxP>> (accessed April 2016.).
209. Oklahoma Department of Civil Emergency Management. *After Action Report, Alfred P Murrah Building Bombing Lessons Learned* Author 1997.
210. Oklahoma Regional Response System, <http://www.ok.gov/homeland/Regional_Response_System/>.
211. Olney J. *Debate Emerges on How to Fight Coastal Erosion* San Francisco: KGO-TV; 2010; February 8. <http://abclocal.go.com/kgo/story?section=news/assignment_7&id=7265989>.
212. Otero, J., 2001. Congress, administration examines emergency communications systems. Nation's Cities Weekly, p. 5.
213. Oxford Dictionary, 2015. Coordination. <http://www.oxforddictionaries.com/us/definition/american_english/coc>.
214. Pan American Health Organization, n.d. Natural disasters: protecting the public's health. PAHO scientific publication No. 575.
215. Patch Reports Highest-Ever Traffic Day, 2012 Patch reports highest-ever traffic day. Ad Age Digital. 2012.
216. Patch, 2013. <<http://www.patch.com/about>>.
217. Perera, A., 2013. Inter Press Service. "When a Tsunami Comes, Tweet." April 2, 2013. <<http://www.ipsnews.net/2013/04/when-a-tsunami-comes-tweet/>>.
218. Perrin, A., 2015. Social media usage 2005–2015. Pew Research Center: Internet, Science and Tech. October 1, 2015. <<http://www.pewinternet.org/2015/10/08/social-networking-usage-2005-2015/>>.
219. Perrin, A., Duggan, M., 2016. Americans' Internet access: 2000–2015. June 26, 2015. <<http://www.pewinternet.org/2015/06/26/americans-internet-access-2000-2015/>>.

- internet-access-2000-2015/>.
220. Pew Research Center for Excellence in Journalism, 2013. The state of the news media 2013: an annual report on American journalism. March 18, 2013. <<http://stateofthemedia.org/>>.
221. Pew Research Center for the People & the Press, 2013. Most expect 'occasional acts of terrorism' in the future. April 23, 2013. <<http://www.people-press.org/2013/04/23/most-expect-occasional-acts-of-terrorism-in-the-future/>>.
222. Pew Research Center for the People & the Press, Internet & American Life Project, 2013. Internet adoption 1995–2013. May, 2013. <<http://www.pewinternet.org/Search.aspx?q=Internet%20Adoption%201995-2012>>.
223. Pew Research Center for the People and the Press, 2012a. In a changing media landscape, even television is vulnerable. September 27, 2012. <<http://www.people-press.org/2012/09/27/in-changing-news-landscape-even-television-is-vulnerable/>>.
224. Pew Research Center for the People and the Press, 2012b. Trends in news consumption 1991–2012: in changing news landscape, even television is vulnerable. <<http://www.people-press.org/2012/09/27/in-changing-news-landscape-even-television-is-vulnerable/>> (27.09.12.).
225. Pew Research Center, 2012. The number of Americans with mobile connections to the web on the rise. November 2, 2012. <<http://www.pewresearch.org/daily-number/number-of-americans-with-mobile-connections-to-the-web-on-the-rise/>>.
226. Pew Research Center's Project for Excellence in Journalism, 2010. Journalism. Org. Understanding the participatory news consumer: how Internet and cellphone users have turned news into a social experience. March 1, 2010. <http://www.journalism.org/analysis_report/understanding_participatory_news_consumer>.
227. PEW Research Center's Project for Excellence in Journalism, 2013. The state of the news Media 2013. <<http://stateofthemedia.org/2013/the-changing-tv-news-landscape/>>.
228. PEW, 2013. Pew Research Center's project on excellence in journalism. <http://www.journalism.org/index_report/hurricane_sandy_and_twitter> (accessed 31.07.13.).
229. PEW, February 14, 2013. PEW Research Center's Internet & American Life Project, February 14, 2013. The demographics of social media users –2012. <http://www.pewinternet.org/~media//Files/Reports/2013/PIP_SocialMedia_2012_Report.pdf>.
230. Powell, M., Haughney, C., 2002. A towering task lags in New York, City debates competing visions for rebuilding devastated downtown. Washington Post, p. A03. Available from: <<http://www.highbeam.com/doc/1P2-324117.html>>.
231. Presutti, C., 2013. Voice of America News. "Multi, social media play huge role in solving Boston bombings. April 26, 2013. <<http://www.voanews.com/content/multi-social-media-play-huge-role-solving-boston-bombings/2642113.html>>.

- in-solving-boston-bombing/1649774.html>.
232. Ranganath, P., 2000. Mitigation and the consequences of international aid in postdisaster reconstruction. Centre d'Etude et de Cooperation Internationale.
 233. Raths, D., 2015. First responders experiment with social media in disaster response. GovTech Social. July 23, 2015.
<<http://www.govtech.com/social/First-Responders-Experiment-with-Social-Media-in-Disaster-Response.html>>.
 234. Rendleman, J., 2001. Back online, despite its losses, verizon went right back to work restoring communications services. InformationWeek,. Available from: <<http://www.informationweek.com/back-online/6507192>>.
 235. Reuters, 2009. U.S. government liable for Katrina damage. ABC Local.
<<http://www.abc.net.au/news/stories/2009/11/20/2748195.htm?site=local>>.
 236. Rich, F., 2013. New York Magazine. The state of journalism: inky tears. April 7, 2013. <<http://nymag.com/news/frank-rich/news-media-2013-4/index1.html>>.
 237. Richardson, C., 2011. WebProNews. Visualizing Twitter use during the Japanese earthquakes. June 30, 2011.
<<http://www.webpronews.com/visualizing-twitter-use-during-the-japanese-earthquakes-2011-06>>.
 238. Richtel, M., Santos, F., 2016. Wildfires, once confines to a season, burn earlier and longer. The New York Times. April 12.
<<http://nyti.ms/1VqKVq3>>.
 239. Rincon, J., 2008. Myanmar: citizen videos in cyclone Nargis Aftermath. Reuters Global News Blog.
<<http://blogs.reuters.com/global/tag/burma/>>.
 240. Rubinstein JL, Mahani AB. Myths and facts on wastewater injection, hydraulic fracturing, enhanced oil recovery, and induced seismicity. *Seismol Res Lett.* 2015;86(4):1–8 <<http://bit.ly/1VaQrMS>>.
 241. Salomons D. *Building Regional and National Capacities for Leadership in Humanitarian Assistance* New York, NY: The Praxis Group; 1998.
 242. San, Y., Clarence, S., Lii, W., Thorkildsen, Z., 2013. Center for Naval Analysis (CNA) and the National Emergency Management Association (NEMA). Social media in the emergency management field. June, 2013.
<http://www.cna.org/sites/default/files/research/SocialMedia_Emergency>.
 243. SBA, 2009. FY2009 annual report on disaster assistance.
<<http://www.sba.gov/sites/default/files/FY2009%20Annual%20Report%20>>.
 244. SBA, 2016. Agency financial report: fiscal year 2015.
<<http://bit.ly/29fNSJ7>>.
 245. Science Daily, 2015. Social media is transforming emergency communications. American Associates, Ben-Gurion University of the Negev. January 19, 2015.
<<https://www.sciencedaily.com/releases/2015/08/150819120537.htm>>.
 246. Science Daily, 2016. Mining social media can help improve disaster

- response efforts. January 20, 2016.
<<https://www.sciencedaily.com/releases/2016/01/160120122810.htm>>.
247. Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006. A Failure of Initiative: Final Report of the Special Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, Government Printing Office. February 15, 2006.
<<http://www.gpoaccess.gov/congress/index.html>>.
248. Select Bipartisan Committee, Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006. A Failure of Initiative: Final Report of the Special Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, Government Printing Office.
<http://katrina.house.gov/full_katrina_report.htm>.
249. Senate Committee on Homeland Security and Governmental Affairs, 2006. Hurricane Katrina: a nation still unprepared. Available from:
<<http://www.gpo.gov/fdsys/pkg/CRPT-109srpt322/pdf/CRPT-109srpt322.pdf>>.
250. Sewell, D.R., 2010. Blog from the Fletcher School Situation Room: "Is it Life or Death?" January 26, 2010
<<http://blog.ushahidi.com/2010/01/26/life-or-death/#sthash.mT9ulJYX.dpuf>>.
251. Shakeout, 2016. Website: <<http://www.shakeout.org/california/>> (accessed 15.06.16.).
252. Shirky C. *Here Comes Everybody: The Power of Organizing Without Organizations* New York, NY: The Penguin Press; 2008.
253. Site One, n.d. History of the Red Cross. Available from:
<<http://www.redcross.org/about-us/history>>.
254. Skarda, E., 2011a. Time. Facebook to the rescue: how social media is changing disaster response. June 9, 2011
<<http://www.time.com/time/nation/article/0,8599,2076195,00.html>>.
255. Skarda, E., 2011b. How social media is changing disaster response. Time Magazine.
<<http://www.time.com/time/nation/article/0,8599,2076195,00.html>>.
256. Smith, A., 2015. U.S. smartphone use in 2015. Pew Research Center: Internet, Science and Tech. April 1, 2015.
<<http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>>.
257. Smith, G., Sandler, D., 2012. State Disaster Recovery Planning Guide. US Department of Homeland Security Coastal Hazards Center of Excellence. University of North Carolina, Chapel Hill.
258. Smith, L.R., Lessons ILearned from Oklahoma City: your employees... Their needs, their role in response and recovery. Available from:
<<http://bit.ly/2gMOpkF>>.
259. Southern African Regional Poverty Network, n.d. Disaster profiles of the least developed countries. <<http://bit.ly/2gX5Wuq>>.
260. Stabe, M., 2007. OJB Online Journalism Blog. California wildfires: a

- round up. October 25, 2007.
<<http://onlinejournalismblog.com/2007/10/25/california-wildfires-a-roundup/>>.
261. Stephens, K., 2012. Top #SMEM challenges for 2013: I don't have time. Idisaster 2.0 Social Media and Emergency Management.
<<http://idisaster.wordpress.com/tag/virtual-operations-support-team/>>.
262. Stephens, K., 2015. Incorporating social media into your exercises #SMEM. Idisaster 2.0. June 4, 2015. <<https://idisaster.wordpress.com>>.
263. Strohm, C., 2007. Homeland Security Budget Generous to Customs, Border Agency, Government Executive. Strohm, C., February 6, 2007. Proposed Cuts to First Responder Grants Draw Fire, Government Executive.
264. Sutton, J., 2013. Interviewed by Kim Haddow on July 9, 2013.
265. The Daily Yomiuri, 2001. VIPs, disaster service calls may get priority. The Yomiuri Shimbun, p. 1.
266. The Weather Channel, 2012. FEMA chief: be prepared.
<<http://www.weather.com/news/fema-fugate-interview-20120507>>.
267. The White House, 2016. Remarks by the President on Hurricane Preparedness – FEMA National Response Coordination Center. May 31, 2016. <<https://www.whitehouse.gov/the-press-office/2016/05/31/remarks-president-hurricane-preparedness-fema-national-response>>.
268. Tinker, T., Fouse, D., 2009. Booz Allen Hamilton. Expert round table on social media and risk communications during times of crisis: strategic challenges and opportunities. March 31, 2009.
<http://www.boozallen.com/media/file/Risk_Communications_Times_of>.
269. Titan Systems, 2002. After-Action Report on the Response to the September 11 Terrorist Attack on the Pentagon. Washington, DC.
<<http://bit.ly/2fGboSv>>.
270. Topping, K., 2005. Policies for guiding planning for post-disaster recovery and reconstruction. American Planning Association. PAS Report No. 483/484.
271. Town of Boone. *All Hazards Planning and Operations Manual* Boone, NC: Author; 1999.
272. Townsend, F.F., 2006. The federal response to Hurricane Katrina lessons learned. The White House. Tsunami education a priority in Hawaii and West Coast States. Bulletin of the American Meteorological Society, June 2001, p. 1207.
273. U.S. Agency for International Development, 1998a. Rebuilding postwar Rwanda: the role of the international community. Available from:
<<http://www.oecd.org/derec/unitedstates/50189461.pdf>>.
274. U.S. Agency for International Development. *U.S Agency for International Development, Field Operations Guide for Disaster Assessment and Response, Version 3.0* Washington, DC: USAID; 1998b.
275. U.S. Agency for International Development. *U.S Agency for International Development, OFDA Annual Report 2000* Washington, DC: USAID; 2000.

276. U.S. Agency for International Development, 2009 U.S. Agency for International Development. 2009. USAID Seeing Results in Tsunami Reconstruction.
277. U.S. Conference of Mayors, 2001. A National Action Plan for Safety and Security in America's Cities. Available from:
[<www.usmayors.org/uscm/home.asp>](http://www.usmayors.org/uscm/home.asp).
278. U.S. Department of State, n.d. Bureau of Population, Refugees, and Migration. Available from: <www.state.gov/g/prm>.
279. U.S. National Climate Change Assessment, 2014. Climate change impacts in the United States. U.S. Global Climate Change Research Program. NCA2014. <globalchange.gov>.
280. UN Rwanda, n.d. The United Nations Development Programme in Rwanda. Available from:
[<http://www.rw.undp.org/rwanda/en/home.html>](http://www.rw.undp.org/rwanda/en/home.html).
281. UNDP, 1997. Further elaboration on follow-up to economic and social council resolution 1995/96: strengthening of the coordination of emergency humanitarian assistance.
282. UNDP, 2001. Disaster profiles of the least developed countries. Third United Nations Conference on Least Developed Countries. May 14–20. <<http://bit.ly/1r3nplj>>.
283. UNDP. *Disaster Profiles of the Least Developed Countries* New York, NY: United Nations; 2001.
284. UNDP, n.d. Building bridges between relief and development: a compendium of the UNDP in crisis countries.
285. UNDP, n.d. The United Nations Development Programme mission statement. Available from:
[<http://www.undp.org/content/undp/en/home/operations/about_us.htm>](http://www.undp.org/content/undp/en/home/operations/about_us.htm)
286. UNHCR. 2001. Coordination in complex emergencies. UNHCR fact sheet. UNHCR Website: <<http://bit.ly/1sPrlb7>> (accessed June 2016.).
287. United Nations, 2000. Yearbook of the United Nations. Department of Public Information, New York, NY.
288. United Nations. *United Nations, General Assembly Economic and Social Council* New York, NY: United Nations; 2001.
289. United States Geological Survey, 1999. Land subsidence in the United States. Circular 1182. <<http://bit.ly/25QGzLV>>.
290. University of Maryland, 2012. Social media use during disasters: a review of the knowledge base and gaps. National Consortium for the Study of Terrorism and Responses to Terrorism. Department of Homeland Security Science and Technology Center of Excellence Based at the University of Maryland.
291. University of Maryland, 2016. Global Terrorism Dataase. National Consortium for the Study of Terrorism and Responses to Terrorism.
292. Urban Search and Rescue Team Photograph.
[<http://www.fema.gov/media-library/assets/images/70583>](http://www.fema.gov/media-library/assets/images/70583).
293. USA.gov. 2013. Hurricane Sandy Recovery: resources to help you recover from Hurricane Sandy.

- <<http://www.usa.gov/Topics/Weather/Hurricane/sandy.shtml>> (accessed 28.08.13.).
294. Ushahidi, 2012. Haiti and the power of crowdsourcing. <<http://blog.ushahidi.com/2012/01/12/haiti-and-the-power-of-crowdsourcing/>>.
295. Virtual Social Media Working Group and DHS First Responders Group, 2013. Lessons learned: social media and Hurricane Sandy. June 2013. <https://communities.firstresponder.gov/DHS_VSMWG_Lessons_Learned.html>.
296. Wagner, M., 2007. Google Maps and Twitter are essential resources for California fires. Information Week. <<http://www.informationweek.com/personal-tech/google-maps-and-twitter-are-essential-in/229214645>>.
297. Walsh E. National response to terror; FEMA leads effort; borders tightened. *Washington Post* 2001;A-1.
298. Washkuch, F., (2008, May 20). Relief groups turn to Twitter amid crises. PR Week May 20, 2008. <<http://www.prweekus.com/Relief-groups-turn-to-Twitter-amid-crises/article/110368/May20>>.
299. Waugh W. *Living with Hazards—Dealing with Disasters: An Introduction to Emergency Management* New York, NY: M.E. Sharpe; 2000.
300. Wax, A.J., Diop, J.C., 2002. Return to downtown; Office leases are being signed again, but revival will take a while. Newsday, p. D13.
301. West, D.M., Valentini, E., 2013. Center for Technology Innovation at Brookings. How mobile devices are transforming disaster relief and public safety. July, 2013. <<http://brook.gs/2fTest1>>.
302. WFP, 2016. Hunger statistics. WFP Website. <<https://www.wfp.org/hunger/stats>> (accessed June 2016.).
303. Whoriskey, P., 2007. Florida's big Hurricane gamble. Washington Post, section A, p. A02.
304. Wireless System Improves Communications, 2001. American City and County.
305. World Bank, 1998. The World Bank: knowledge and resources for change. <<http://bit.ly/22zBPrI>>.
306. World Bank, 2000. Assistance to post-conflict countries and the HIPC framework. Available from: <www.imf.org/external/np/hipc/2001/pc/042001.htm>.
307. World Bank. 2011. Financing recovery and reconstruction. Global Facility for Disaster Risk Reduction. <http://www.gfdrr.org/sites/gfdrr.org/files/2-Financing_Reconstruction_Vienna.pdf>.
308. World Bank. 2012. Adapting to climate change: assessing the World Bank Group experience. Independent Evaluation Group. <<http://ieg.worldbankgroup.org/evaluations/adapting-climate-change-assessing-world-bank-group-experience>>.
309. World Bank, 2016a. Progress Report on Mainstreaming Disaster Risk Management in World Bank Group Operations. Joint Development Committee. March 25. <<http://bit.ly/1O6wULJ>>.

310. World Bank, 2016b. Country strategies. World Bank Website.
[<http://bit.ly/1XmCYDs>](http://bit.ly/1XmCYDs) (accessed June 2016.).
311. Yeomans, M., 2012. Social media's crucial role in disaster relief efforts. The Guardian.com. Poste don November 6, 2012.
[<http://www.theguardian.com/sustainable-business/social-media-hurricane-sandy-emergency-planners>](http://www.theguardian.com/sustainable-business/social-media-hurricane-sandy-emergency-planners).
312. Yglesias, M., 2013. Slate. The glory days of American Journalism. March 19, 2013.
[<http://www.slate.com/articles/business/moneybox/2013/03/pew_s_state>](http://www.slate.com/articles/business/moneybox/2013/03/pew_s_state)
313. YouTube YouTube, <<http://www.youtube.com/user/AfterNargisYgn>>.
314. Zevin, R., 2001. Tapping web power in emergencies. American City and County.

Glossary

Adjutant General An administrative military officer charged with managing military assets in a particular state, primarily those of the National Guard. Many adjutant generals are also charged with managing the state's emergency management resources, though this association has diminished over time.

After-Action Report A document that summarizes any problems or capability deficiencies that arose in the response to a disaster event and provides possible explanations and solutions for organization learning purposes.

Avalanche A mass of ice or snow that moves downhill at a high velocity.

Blizzard A type of severe snowstorm accompanied by very low temperatures (below 20F) and high winds (35 mph or greater).

Building codes Regulations enacted by state and local governments that provide the requirements for design and construction of buildings in a given jurisdiction.

Business continuity planning The act of developing a plan by which the survival of an operation of a business is maintained despite the consequences sustained due to emergency or disaster losses (direct or indirect).

CBRN weapons The broad family of weapons that include chemical, biological, radiological, and nuclear agents, which have the potential to bring about an extraordinary degree of deaths, injuries, and property destruction.

Civil defense The discipline dealing with protecting civil society from threats.

Coastal erosion A loss of land bordering a body of water.

Complex humanitarian emergency A humanitarian crisis in a country or region where there is total or considerable breakdown of authority resulting from the internal and/or external conflict and which requires an international response that goes beyond the mandate or capacity of any single agency.

Continuity of Operations Plan (COOP) A planning document that outlines the actions that must be taken to ensure governmental or organizational services and activities (including business operations) do not cease during

emergency or disaster contingencies, and identifies the individuals or agencies responsible for those actions.

Coordinating organization Associations of NGOs that coordinate the activities of hundreds of preregistered member organizations to ensure response with maximized impact.

Critical infrastructure Infrastructure components that are essential for the normal functioning of society.

Dam failure The sudden breach of a river water containment wall, known as a dam, which results in a sudden and uncontrolled downstream rush of water and debris.

Department of Homeland Security The federal departments charged with protecting the United States from future terrorist attacks, reducing the nation's vulnerability to terrorism, and minimizing the damage from potential terrorist attacks and natural disasters.

Developing nation A self-applied title typically used to describe countries with lower economic, social, nutritional, and other scores on common development indices.

Disaster An event that exceeds the emergency response and recovery capabilities and resources of the agencies and officials responsible for its management in one or more critical areas of response or recovery.

Disaster communications strategy Provides timely and accurate information to the public in all four phases of emergency management.

Disaster Recovery Center A satellite component of the Joint Field Office; provides a central facility where individuals affected by a disaster can obtain information on disaster recovery assistance programs.

Donor agency Private, national, or regional organizations whose mission is to provide the financial and material resources for humanitarian relief and subsequent rehabilitation.

Drill A controlled, supervised method by which a single disaster management operation or function is practiced or tested.

Earthquake A sudden, rapid shaking of the earth's crust caused by the breaking and shifting of rock beneath the earth's surface.

Emergency management The discipline dealing with risk and risk avoidance.

Emergency management/response personnel Includes federal, state, territorial, tribal, substate regional, and local governments, NGOs, private sector organizations, critical infrastructure owners and operators, and all other organizations and individuals who assume an emergency management role.

(Also known as emergency responder.)

Emergency Operations Plan An ongoing plan for responding to a wide variety of potential hazards.

Emergency support function The coordination mechanism to provide assistance to state, local, and tribal governments or to federal departments and agencies conducting missions of primary federal responsibility.

Expansive soil Soils and soft rock that tend to swell or shrink because of changes in moisture content.

Extreme cold Periods of colder than normal conditions exhibiting a range of negative consequences as dictated by the particular area and economy faced with the cold conditions.

Extreme heat Temperatures that hover 10° or more above the average high temperature for the region and last for several weeks.

Federal Coordinating Officer (FCO) Appointed to manage the federal resources during a disaster, their primary mission is to coordinate the timely delivery of federal assistance to state and local governments, individual victims, and the private sector.

Federal disaster recovery coordinator This official functions as a deputy to the Federal Coordinating Officer (FCO) at the Joint Field Office (JFO), to coordinate federal recovery efforts on the FCO's behalf. The FDRC serves as the local, state, and tribal entry point for federal recovery-related matters, and the primary contact for helping to identify and resolve recovery needs.

Federal Emergency Management Agency (FEMA) The federal agency responsible for federal policies, programs, and actions to mitigate, prepare for, respond to, and recover from all-hazards.

First responders Fire, police, and emergency medical technicians.

Flood An overabundance of water that engulfs normally dry land and property, which may be caused by a number of factors, including heavy rainfall, melting snow, an obstruction of a natural waterway, and other generative factors.

Full-scale exercise A scenario-based event that seeks to create an atmosphere closely mimicking an actual disaster.

FSMAUGO A risk assessment methodology that considers hazards according to their Frequency, Seriousness, Manageability, Awareness, Urgency, Growth, and a seventh category called Outrage that relates to public opinions.

Hail Frozen atmospheric water that falls to the earth.

Hazard A source of danger that may or may not lead to an emergency or disaster and is named after the emergency/disaster that could be so precipitated.

Hazard identification The process undertaken to analyze sources of danger that may or may not lead to an emergency or disaster. Hazard identification is the foundation of all emergency management activities.

Hazardous materials Substances that can pose a threat to the environment or health if accidentally or intentionally released.

Hazards-risk management A process by which individuals, communities, and countries deal with the hazard risks they face.

Homeland Security Presidential Directive (HSPD) Presidential directives are executive orders issued by the president of the United States that have security implications and legal authority. Presidents have used a range of terminology for these directives; the HSPD was a moniker of choice for the George W. Bush administration.

Hurricane A tropical storm with winds that have reached a sustained speed of 74 miles per hour.

Incident Commander (IC) The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site.

Incident Command System (ICS) Establishes a set of planning and management systems that helps agencies responding to a disaster work together in a coordinated and systematic approach.

International financial institution Organizations comprised of national governments that provide loans for development and financial cooperation throughout the world.

International organization An organization with global presence and influence.

Joint Field Office (JFO) The primary federal incident management field structure. The JFO is a temporary federal facility that provides a central location for the coordination of federal, state, tribal, and local governments and private sector and nongovernmental organizations with primary responsibility for response and recovery.

Joint Information Center The central point for coordination of emergency public information, public affairs activities, and media access to information about the latest developments in a disaster.

Landslide an uncontrolled movement of relatively dry rock, soil, or debris down a slope.

Land-use planning A process that is applied within communities to determine how the community will grow and develop. It includes a number of strategies which support mitigation such as ordinances, easements, flood plain management, acquisition annexation, historic and environmental reviews, setbacks, and subdivision controls.

Lateral spread The downward and outward spreading of large quantities of accumulated earth or other materials due to gradual hydrologic and gravitational forces.

Mass movement The horizontal or lateral movement of large quantities of physical matter.

Mitigation A sustained action to reduce or eliminate risk to people and property from hazards and their effects.

Mudflow (or debris flow) A water-saturated river of rock, earth, and other debris that is drawn downward by the forces of gravity.

National Disaster Recovery Framework A conceptual guide developed by FEMA that, similar to the National Response Framework, defines the roles of all recovery stakeholders (governmental, nonprofit, private sector, and others) before and after disasters have occurred, and explains how the federal government supports state and local governments in their recovery planning efforts.

National Incident Management System A set of principles that provides a systematic, proactive approach guiding government agencies at all levels, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life or property and harm to the environment.

National Mitigation Framework A conceptual guide developed by FEMA in order to establish a common platform for coordinating disaster risk reduction efforts at all government levels and by all nongovernmental and private sector stakeholders.

National Processing Service Centers (NPSCs) Receives calls and processes applications from disaster victims who need assistance. The NPSCs are central to the success of the applicant telephone registration process and the FEMA Helpline. The advantage of the centralized NPSC system is that the centers can be staffed within 5 hours after the president declares a national disaster.

National Response Framework A guide to how the nation conducts an all-hazards response.

National Terrorism Advisory System A terror alert system that is administered by the Department of Homeland Security that replaces the color-coded Homeland Security Advisory System.

Natural hazard A hazard that exists in the natural environment and poses a threat to human populations and communities.

New media Social media outlets such as YouTube, Facebook, and Twitter.

Nongovernmental organization The general term for an organization made up of private citizens with no affiliation with a government of any nation other than the support from government sources in the form of financial or in-kind contributions.

Preparedness A state of readiness to respond to a disaster, crisis, or any other type of emergency situation.

Private voluntary organization An organization that is nonprofit, tax-exempt, and receives at least a part of its funding from private donor sources.

Recovery The development, coordination, and execution of service- and site-restoration plans; the reconstitution of government operations and services; individual, private sector, nongovernmental, and public assistance programs to provide housing and to promote restoration; long-term care and treatment of affected persons; additional measures for social, political, environmental, and economic restoration; evaluation of the incident to identify lessons learned; post-incident reporting; and development of initiatives to mitigate the effects of future incidents.

Risk A measure of the likelihood that a hazard will manifest into an actual emergency or disaster event and the consequences should that event occur.

Rockfall Occurs when masses of rock or other material detach from a steep slope or cliff and descend by freefall, rolling, or bouncing.

Safe room An area within a larger structure that is designed to withstand the wind and debris forces of a major tornado.

Severe winter storm Occurs when extremely cold atmospheric conditions coincide with high airborne moisture content resulting in rapid and heavy precipitation of snow and/or ice.

Situation report A report that provides information regarding the nature and scope of an incident, the estimated human and economic damages, and what recovery measures are underway.

Social media The means of interactions among people in which they create, share, and exchange information and ideas in virtual communities and networks. A term used to collectively describe a set of tools that foster interaction, discussion, and community, allowing people to build relationships and share information.

Sovereignty The recognition of political authority characterized by territory and autonomy.

State coordinating officer When the president makes a major disaster declaration, s/he shall request that the governor of the affected state designate a state coordinating officer for the purpose of coordinating state and local disaster assistance efforts with those of the federal government.

Storm surge A mass of water that is pushed towards the shore by the force of an oncoming storm or other force.

Structural controls Physical constructed measures taken to control the impacts of hazards such as levees, culverts, groins, and seawalls.

Tabletop exercise A discussion-based activity wherein officials either practice components of or the full activation of the emergency response plan within the confines of a controlled, low-stress meeting environment.

Technological hazard Hazards that exist as a result of technological innovation and human development.

Terrorism The use of force or violence against persons or property for purposes of intimidation, coercion, or spreading faith in order to attain political, religious, or ideological goals.

Thunderstorm A meteorological event generated by atmospheric imbalance and turbulence caused by unstable warm air that rises rapidly, heavy moisture, and upward lift of air currents that can bring a combination of heavy rains, strong winds, hail, lightning, and tornadoes.

Tornado A rapidly rotating vortex or funnel of air extending groundward from a cumulonimbus cloud.

Tropical cyclone A low-pressure area of closed-circulation winds that originates over tropical waters.

Tropical storm A warm-core tropical cyclone in which the maximum sustained surface wind speed ranges from 39 miles per hour to less than 74 miles per hour.

Tsunami A wave or series of waves generated by a mass displacement of sea or lake water.

Unified Command A process that all participating agencies can use to improve overall management whether their jurisdiction is of a geographical or functional nature.

Volcano A break in the earth's crust from which molten rock exits from below the surface.

Wildland fire (or wildfire) A large, often out-of-control burning of trees, fallen wood, detritus, and other debris in uninhabited or sparsely inhabited forest or grasslands.

Zoning Involves the regulation of the use and development of real estate. Zoning regulations and restrictions are used by municipalities to control and direct the development of property within their borders.

Index

Note: Page numbers followed by “*b*”, “*f*”, and “*t*” refer to boxes, figures and tables, respectively.

A

AAR, *See* After action reporting

Access and functional needs populations, 135–138, 138*b*

Adapting, 203–207

Adjutant general, 424

Administration on Aging (AoA), 317

Advance Evaluation Team (AET), 302

Advisory group, 288

Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, 401

AEL, *See* Authorized equipment list

After action reporting (AAR), 125

After-action reports, 395

Agriculture, Department of (DOA), 316

Agriculture sector, 292

Air raid drills, 141

al Qaeda, 64–65

Allbaugh, Joe, 12

Allen, Thad, 416–417

Allstate Insurance Company, 95–96

Alpert, Jane, 384

Alphabet Bomber, 384

Alquist-Priola Act, 86

al-Zawahiri, Ayman, 390

Amateur Radio Emergency Service (ARES), [156b](#)
American Bar Association, [307](#)
American Red Cross, [160](#), [173f](#), [212](#), [274f](#), [319](#)
See also International Committee of the Red Cross, International Federation of Red Cross, International Red Cross
American Society of Civil Engineers, [38–40](#), [62](#)
Amos, Valerie, [344](#)
ANAB, *See* [ANSI-ASQ National Accreditation Board](#)
Anarchists, [383–384](#), [387](#)
ANSI-ASQ National Accreditation Board (ANAB), [153](#)
AoA, *See* [Administration on Aging](#)
Appointed officials, [198](#), [198](#), [257–258](#)
Are You Ready? (FEMA), [142](#)
Area Command, [239–240](#)
Army Corps of Engineers, U.S., [103f](#)
Army Corps of Engineers, U.S., [3](#)
Army Corps of Engineers, U.S., [26–27](#)
Army Corps of Engineers, U.S., [103](#)
Army Corps of Engineers, U.S., [315](#)
ASFPM, *See* [Association of State Flood Plain Managers](#)
Ash Wednesday storm, [4](#)
Asian tsunami, [180](#)
Assassination, of McKinley, [383–384](#)
Assistant Secretary for Preparedness and Response (ASPR), [422–423](#)
Association of State Flood Plain Managers (ASFPM), [115](#)
ATF, *See* [Bureau of Alcohol, Tobacco, and Firearms](#)
Attack on the Pentagon" (Titan Systems Corporation), [395](#), [397](#)
Attorney general, [259](#)
Attorney General's Five Year Interagency Counterterrorism and Technology Crime Plan, [401–402](#)
Authorized equipment list (AEL), [139](#)
Avalanches, [52](#)
Awareness, [152](#)

B

- Balance of payment support, 365
- Base plan, 126
- BCP, *See* Business Continuity Planning
- BCPR, *See* Bureau of Crisis Prevention and Recovery
- Beach replenishment, 103, 103
- Becton, Julius, 8
- Bernstein, George, 5
- Bias, 336
- Biden, Joe, 416
- Biggert-Waters Flood Insurance Reform Act of 2012, 96b
- Bin Laden, Osama, 390
- Biological agents, 66–67
- BIS, *See* Bureau of Industry and Security
- Blizzards, 55–56
- Blogs, 174, 194
- Bloomberg, Michael, 164
- Boggs, Hale, 4–5
- Bond issues, 90
- Border and Transportation Security (BTS), 13–14
- Boston Marathon Bombing, 2013, 28, 160, 184–185, 391
- Boston Tea Party, 382
- Breivik, Anders Behring, 387
- Bremer Commission, 401
- Breton National Wildlife Refuge, 45
- Brown, Cora C., 308
- Brown, Gordon, 416
- Brown, Michael, 14, 21
- BTS, *See* Border and Transportation Security
- Building codes, 84, 84, 84–86, 320
- Bureau for Democracy, Conflict, and Humanitarian Response (DCHA), 357–358
- Bureau for Population, Refugees, and Migration (PRM), 360

Bureau of Alcohol, Tobacco, and Firearms (ATF), 308, 421
Bureau of Crisis Prevention and Recovery (BCPR), 343
Bureau of Industry and Security (BIS), 420
Bureau of Public Roads, 3
Bush, George H. W., 9
Bush, George W., 12, 16, 112, 228, 247, 248, 402, 416
Bush (George W.) administration, 19b
Business, 443, 445
Business Continuity Planning (BCP), 151–153

C

Cable News Network (CNN), 182
CAEP, *See City-Assisted Evacuation Plan*
California wildfires, 181
CAP, *See Community Assistance Program*
Capacity building, 336–337
Carter, Jimmy, 6, 6, 381, 399
Carwile, Bill, 22
CAS, *See Comprehensive Assessment System, Country Assistance Strategy*
CBP, *See Customs and Border Protection*
CBRN incidents (chemical, biological, radiological, nuclear), 65b
CBRN weapons (chemical, biological, radiological, nuclear), 65b
CDBG, *See Community Development Block Grant*
Cedar Rapids Business Case Management Program, 316b
CEI, *See Composite Exposure Indicator approach*
CEM program, *See Certified Emergency Manager program*
Center for Mental Health Services (CMHS), 317
Centers for Disease Control and Prevention (CDC), 422–423
CERT, *See Community Emergency Response Team*
Certified Emergency Manager (CEM) program, 148, 232
Chemical agents, 66
Chemical weapons, 66

Cheney, Dick, 12

Chernobyl Nuclear Power Plant, 63, 335

Chertoff, Michael, 14–15, 15, 417

CHEs, *See* Complex Humanitarian Emergencies

Chicago heat wave, 137–138

China's SARs epidemic, 180

China's Sichuan earthquake, 181–182

Christie, Chris, 25–26

Citizen involvement, 261, 429

Citizenship and Immigration Services, U.S. (USCIS), 414

City-Assisted Evacuation Plan (CAEP), 133

Civil defense, 3–4, 8–9, 141, 398–399

Civil Military Operations Center (CMOC), 362

Class bias, 336

Climate change, 115–117, 441

Clinton, Bill, 10, 11, 401, 416, 419

Clinton, Hillary, 19–20

Clinton administration, 10, 107

CMHS, *See* Center for Mental Health Services

C-MIST, 136

CMM, *See* Office of Conflict Management and Mitigation

CMOC, *See* Civil Military Operations Center

CNN, *See* Cable News Network

Coastal erosion, 58–59, 86, 103

Cold War, 3–4

Cole, USS, 390

Collins, Susan, 19–20

“Combating Terrorism: Comments on Counterterrorism Leadership and National Strategy” (GAO), 402

“Combating Terrorism: Selected Challenges and Related Recommendations” (GAO), 402

Commerce, Department of, 317, 420–421

Communication strategies and messages, 327

Communications, 159
adapting in, 203–207
assumptions, 163–172
building capability of, 159
creating effective, 187–189
customer focus of, 163–164
elements necessary for, 187–189
exercises for, 201–203
information for, 191–193, 193–198
leadership commitment in, 164
media and, 159, 159, 159–160
media partnerships and, 163, 170–172
messengers in, 198–199
mission/strategy of, 162
monitoring in, 203–207
overview of, 204
plan, 189–191
planning/operations and, 166–167
risk, 141–143
situational awareness and, 163, 167
social media and, 159, 159, 159–160, 172
staffing and, 199–201
strategy, 162
technology and, 443
training/exercises for, 201–203
updating in, 203–207

Communications and technology, 443

Community Assistance Program (CAP), 111

Community Development Block Grant (CDBG), 26, 90, 315

Community Emergency Response Team (CERT), 142, 142, 142, 142–143

Community Emergency Response Teams (CERTs), 429

Community long-term recovery planning, 320

Community outreach teams, [154b](#)
Community Rating System (CRS), [90–91](#), [93](#), [93–95](#)
Community Recovery Assistance Group, [302–303](#)
Community resilience, [116b](#)
Community-level funding, [419–429](#)
Complex Humanitarian Emergencies (CHEs), [332](#)
Compliance, [145](#)
Composite Exposure Indicator approach (CEI), [70](#)
Comprehensive Assessment System (CAS), [148](#)
Comprehensive Planning Guide-101 (CPG-101) (FEMA), [127](#)
Comprehensive Preparedness Guide (CPG), [127](#), [127](#)
Construction standards, [84–86](#)
Coordinating organizations, [353](#)
Coordination, [334](#), [366](#)
Coordination and Response Division (CRD), [347](#)
Coordination during recovery, [285–291](#)
Cora C. Brown Fund, [308](#)
Council on Foreign Relations, [386–388](#)
“Countering the Changing Threat of International Terrorism” (Bremer Commission), [401](#)
Country Assistance Strategy (CAS), [367](#)
CPG-101, *See* [Comprehensive Planning Guide-101](#)
CRD, *See* [Coordination and Response Division](#)
Crisis counseling, [308](#)
Crisis Counseling Assistance and Training Program, [308](#)
Critical infrastructure, [401](#)
Crosby, Ken, [85](#)
Cross Agency Team, [196](#)
Crowdsourcing, [175](#), [196b](#)
Crown fires, [48–49](#)
Cultural outreach, [443](#)
Cuomo, Andrew, [284f](#)
Customer focus

of communications, 163–164
of emergency management, 163–164
Customs and Border Protection (CBP), 414, 417
Cyberterrorism, 378–379
Cyclone Nargis, 181–182, 335

D

DAEs, *See Disaster Assistance Employees*
Dam failures, 62
DARTs, *See Disaster Assistance Response Teams*
Davis, Ron, 89–90
DCHA, *See Bureau for Democracy, Conflict, and Humanitarian Response*
DCO, *See Defense coordinating officer*
DEA, *See Drug Enforcement Administration*
DEC, *See Disaster Emergency Communications*
Declaration process, 225–226, 240–246, 251, 251–252, 251, 252, 282
Defense, Department of (DOD), 13, 360, 422
Defense Coordinating Officer, 270
Department of Labor (DOL), 317–318
DESA, *See Economic and Social Affairs, Department of*
Design and construction, 84–86
Developing nations, disasters in, 332
Development, relief linked with, 336–337
DHHS, *See Health and Human Services, Department of*
DHS, *See Homeland Security, Department of*
Digital Mapping, 175
Digital media during disasters, 186–187
Dillon, John F., 425b
Dirty bomb, 67–68
Disaster Ally, 49f
Disaster Assistance Employees (DAEs), 272–275
Disaster Assistance Response Teams (DARTs), 358–359, 372

Disaster communications, *See* [Communications](#)

Disaster Damage, Loss, and Needs Assessment Assistance, [367–368](#)

Disaster Emergency Communications (DEC), [147–148](#)

Disaster Mitigation Act of 2000 (DMA2000), [105–106](#)

Disaster Preparedness Division, [142](#)

Disaster preparedness planning and activities, [132](#)

Disaster recovery, *See* [Recovery](#)

“Disaster Recovery: FEMA’s Public Assistance Grant Program Experienced Challenges in Gulf Coast Rebuilding” (GAO), [311](#)

Disaster Recovery Center (DRC), [290](#)

Disaster Relief Act of 1974, [5–6](#), [399](#)

Disaster relief fund (DRF), [311–314](#)

Disaster Risk Management Team, [367](#)

Disaster Risk Reduction, [441](#)

Disaster Unemployment Assistance (DUA), [307](#), [317](#)

Disaster-Resistant Jobs course, [140](#)

Disaster(s)

See also [Response](#)

 costs of, [79](#)

 definition of, [33](#), [332](#)

 in developing nations, [332](#)

 FEMA tested by, [25](#), [25](#), [25](#), [25–26](#), [26](#), [26–27](#), [27–28](#), [28](#), [28](#)

 Housing Program, [305](#)

 international, [332–334](#)

 lending instruments, [364–366](#)

 Midwest floods declarations of, [10](#)

 poverty’s correlation with, [73–75](#)

 presidential disaster declaration process in, [225–226](#), [240–246](#), [251](#), [251–252](#), [251](#), [252](#), [282](#)

 situational awareness in, [167–169](#)

 UNDP management of, [342–343](#)

“Disaster-Zone”, [195](#)

DMA2000, *See* [Disaster Mitigation Act of 2000](#)

DOD, *See* Defense, Department of
DOJ, *See* Justice, Department of
DOL, *See* Department of Labor
Domestic Nuclear Detection Office, 415–419
Domestic terrorists, 384
Donor agencies, 353
Donor Relations Section (DRS), 347
Donovan, Shaun, 26
Doonesbury, 8
DOT, *See* Transportation, Department of
DRC, *See* Disaster Recovery Center
DRI International (DRII), 153
Drill, 144
Drought, 56–57
DRS, *See* Donor Relations Section
Drug Enforcement Administration (DEA), 421
DUA, *See* Disaster Unemployment Assistance
Dual Status commanders, 233
Dunant, Henry, 354

E

Eagleton, Tom, 5
EAP, *See* Employee Assistance Program
Earthquakes, 35*f*, 37–39, 39*t*
See also Mitigation
Eastern Band of the Cherokee Indians (ECBI), 310*f*
Ebola Virus Disease (EVD), 154*b*
ECBI, *See* Eastern Band of the Cherokee Indians
ECHA, *See* Executive Committee on Humanitarian Affairs
Economic and Social Affairs, Department of (DESA), 349–350
Economic and Social Council (ECOSOC), 341
Economic Development Administration (EDA), 140, 317
Economic risk factors, 73–75

EDA, *See* Economic Development Administration

Education and training, 124–125, 139

Education sector, 292

Elected officials, 164, 198, 257–258

EMAC, *See* Emergency Management Assistance Compact

EMAP, *See* Emergency Management Accreditation Program

Emergencies, 333–334

Emergency management

See also Federal Emergency Management Agency, Whole Community approach

as academic field, 122

as applied practice, 122

business continuity planning and, 151–153

challenges, 441–444

changes to, 2–3, 4–5, 19–21, 439–441, 445

civil defense, 3–4, 8–9

Cold War, 3–4

customer focus of, 163–164

definition of, 2

DHS/changes in, 12–16, 20

exercises for, 143–146

funding for, 429–430

future environment of, 441–444

as government role, 2

higher education for, 140

history of, 1–3, 12

1800–1950, 3

1950s, 3–4

1960s, 4–5

1970s, 5–7

1980s, 8–9

1989–1992, 9–10

1993–2001, 10–12

2001, 10–12
2001–2005, 12–16
2005, 16–18, 18–19
early, 3
Obama Administration, 22–24, 24–28
Hurricane Katrina and, 16–18, 18–19, 19–21
mitigation in, 79, 80, 80, 80, 80–81
national focus on, 5–7
nuclear attack planning and, 8–9
Obama administration and, 22–24, 24–28
opportunities, 441–444
overview of, 1–3
responsibility for, 5–7
scenarios, 444–445
status of, 439–441
terrorism and, 12, 12–16, 379–380
terrorism/changes in, 1–2, 380–381
tests of system of, 227
in Witt Revolution, 10–12

Emergency Management Accreditation Program (EMAP), 146–147
Emergency Management Assistance Compact (EMAC), 275–277, 276*f*
Emergency Management Institute (EMI), 15, 140, 140, 140, 141, 231–232
“Emergency Management” magazine, 162
Emergency Management Performance Grant Program (EMPG), 150
Emergency management/response personnel, 225
emergency managers, 199*b*
Emergency Operations Center (EOC), 127, 239*f*, 262
Emergency Operations Plan (EOP), 126–128, 230–231, 231
Emergency planning, 135–138, 138*b*
Emergency Preparedness and Response (EP&R), 13–14, 14
Emergency Recovery Loan program (ERL), 364–365
Emergency Relief Coordinator (ERC), 337–338, 344, 345

Emergency Relief Program, 317
Emergency Response Division (ERD), 343
Emergency Response Roster (ERR), 348
Emergency Response Unit (ERU), 355–356
Emergency Services Branch (ESB), 347
Emergency Support Functions (ESFs), 252–261, 255b, 293, 296
Emergency work, 309
EMI, *See* Emergency Management Institute
EMPG, *See* Emergency Management Performance Grant Program
Employee Assistance Program (EAP), 397
Environmental Emergencies Section, 348–349
Environmental Protection Agency (EPA), 421
EOC, *See* Emergency Operations Center
EOP, *See* Emergency Operations Plan
EPA, *See* Environmental Protection Agency
EP&R, *See* Emergency Preparedness and Response
Equality in relief distribution, 335–336
Equipment, for preparedness, 124, 138–139
ERC, *See* Emergency Relief Coordinator
ERD, *See* Emergency Response Division
ERL, *See* Emergency Recovery Loan program
ERR, *See* Emergency Response Roster
ERT-As, *See* Regional Emergency Response Teams
ERT-Ns, *See* National Emergency Response Teams
ESB, *See* Emergency Services Branch
ESFs, *See* Emergency Support Functions
ETSS, 46
ET-SURGE, 46
Evacuation planning, 133–135
Evacuteer.org, 134b
Evaluation, in preparedness, 125, 146–148
Executive Committee on Humanitarian Affairs (ECHA), 345

Executive Orders, 399, 402
Exercises, 125, 140, 143–146, 143*f*, 144*f*, 201–203
Expansive soils, 52
External Affairs (EA) Officer, 301
Extreme cold, 58
Extreme heat, 58
Extreme temperatures, 58

F

Facebook, 176, 194, 214
“Safety Check” feature, 185–186
FACT, *See* Field Assessment and Coordination Team
Faris, Roger, 110
Farm Service Agency (FSA), 316
FBI, *See* Federal Bureau of Investigation
FCDA, *See* Federal Civil Defense Administration
FCO, *See* Federal coordinating officer
FCSS, *See* Field Coordination Support Section
FDRC, *See* Federal Disaster Recovery Coordinator
Federal agency disaster recovery funding, 314–318
Federal assistance, 251–252
Federal Bureau of Investigation (FBI), 65–66, 421
Federal Civil Defense Administration (FCDA), 3, 398–399
Federal Civil Defense Guide, 127
Federal coordinating officer (FCO), 271–272, 272*b*, 298–299, 299–300
Federal disaster assistance, 251–252
Federal Disaster Recovery Coordinator (FDRC), 299–300
 community liaison, 300–301
 FDRC-RSF management structure, 303–304
Federal Disaster Recovery Officer (FDRO), 300
Federal Emergency Management Agency (FEMA), 11–12, 12, 127, 412
 See also Whole Community approach
2001 terrorism and, 12

administrator, 259
AEL created by, 139
after Hurricane Katrina, 19–21
beach replenishment supported by, 103
Boston Marathon bombings role of, 28
declaration criteria, 246
DHS and, 13, 13–14, 14, 14, 15, 18, 381, 398, 415*b*
Directorate of Training and Education, 8
disasters testing, 25, 25, 25, 25–26, 26, 26–27, 27–28, 28, 28
document of, 128–129
education/training approach of, 140–141
establishment of, 6, 6–7, 7, 7, 7, 7, 8, 277, 399
Facebook used by, 214
fire grants, 429–430
fraud allegations and, 14*b*
Hurricane Katrina debacle of, 16–18, 18–19
Hurricane Sandy response of, 25–26
Incident Management Assistance Teams, 267–268
Individual Assistance programs, 304–308
MATS of, 114–115
mitigation initiatives of, 113*b*
mitigation issues abdication of, 26–27
mitigation programs of, 105
mobile operations capabilities of, 274*b*
Mobile Operations Division, 274*b*
National Disaster Reservists, 272–275
National Hurricane Program of, 112–113
National Preparedness Directorate of, 148, 150
National Processing Service Centers, 304–308
NEHRP role of, 112–113
nuclear attack planning and, 8–9
post-Hurricane Katrina changes in, 19–21

Private Sector Division, 152
Public Assistance Grant Programs of, 308–311
public assistance spending of, 282
Qualification System, 273*b*
recovery assistance programs, 304
Region IX, 143*f*
response to Hurricane Sandy, 242*b*
and social media, 28–29
and Strategic Foresight Initiative, 29–30
terrorism and, 12, 19, 28
troubled times of, 9–10
Twitter used by, 213, 214
Unified Coordination Group, 270–271
Witt revolution of, 10–12
Federal government, 250
Federal government disaster recovery assistance, 293–304
Federal Highway Administration (FHWA), 317
Federal Insurance Administration (FIA), 5
Federal Law Enforcement Training Center, 412
Federal Radiological Emergency Response Plan (FRERP), 400
Federal Recovery Assistance Programs, 439–440
Federal resource coordinator (FRC), 270
Federal response, 240–246, 247, 262
Federal Response Plan (FRP), 9, 246–247, 293, 293–294, 294, 399
“The Federal Response to Hurricane Katrina: Lessons Learned”, 19*b*, 42
FEMA, *See* Federal Emergency Management Agency
 Mitigation Community Education Outreach, 82*f*
“FEMA: In or Out?” (Department of Homeland Security Office of the Inspector General), 415
FEMA National Response Coordination Center, 165*b*
FEMA preparedness planning tools and guides, 127*b*
FEMA-DR-1961, 30
FEMA-DR-1980, 30

FHA, *See Foreign Humanitarian Assistance*
FHWA, *See Federal Highway Administration*
FIA, *See Federal Insurance Administration*
Field Assessment and Coordination Team (FACT), 355
Field Coordination Support Section (FCSS), 347–348
Field Coordination Support Unit, 345
Financial incentives, 90–92
Financial policy areas and tools, 319–320
Financial status, 74
Fire grants, 430
Fire Prevention and Assistance Act, 113–114, 430
Firestorms, 50
First responders, 228, 230, 230–231, 277, 394, 395, 424–425, 430
Floating zones, 90
Flood Control Act of 1936, 3
Flood Insurance Act of 1972, 5
Flood Insurance Reform Act of 2012, 96b
Flood Map Assistance Program (FMAP), 110–111
Flood Mitigation Assistance (FMA), 93
Floods, 3, 35–37, 36t, 45, 87b, 89b
See also Midwest floods, Mitigation, National Flood Insurance Program
FMA, *See Flood Mitigation Assistance*
FMAP, *See Flood Map Assistance Program*
Food Safety and Inspection Service (FSIS), 420
Force Protection, 361
Foreign Humanitarian Assistance (FHA), 361
Forums, 175
FPD, *See Office of Food for Peace*
Fraud allegations, 14b
FRC, *See Federal resource coordinator*
Freeman, Beth, 25, 268
Free-standing investment projects, for mitigation, 366
FRERP, *See Federal Radiological Emergency Response Plan*

Frogge, Amy, 174f
FRP, *See* Federal Response Plan
FSA, *See* Farm Service Agency
FSMAUGO, 72
Fugate, Craig, 2–3, 22, 22, 22, 22f, 23, 23–24, 25, 28–29, 29–30, 164, 164–166, 268
Fujita-Pearson Tornado Scale, 46–47, 47t
Full-scale exercise, 144
Functional annexes, 126
Functional exercise, 144
Funding, 444

G

GAO, *See* General Accounting Office
Gender bias, 335–336
General Accounting Office (GAO), 311, 402
Geographic Information systems (GIS), 83
Getting Ready for Disaster, 142
GFDRR, *See* Global Facility for Disaster Risk Reduction
Gilmore Commission, 401
Gilroy, Dennis, 396
Gingrich, Newt, 401
GIS, *See* Geographic Information systems
Giuffrida, Louis O., 8, 12
Global Facility for Disaster Risk Reduction (GFDRR), 363
Global Seismographic Network (GSN), 112
Goldwater-Nichols Act of 1986, 418
Google, 73
Google Map, 196
Gore, Al, 8
Governance sector, 292
Government, 65–66, 357–362
 See also State government
Governors, 225, 225–226, 232, 232–233, 233, 240–246, 257, 424

Governors, 251–252, 252, 252
Great East Japan Earthquake, 63
“The Great USA Flood of 1993”, 10b
Ground fires, 48–49
GSN, *See Global Seismographic Network*
Guide for Developing High Quality Emergency Operations Plans for Houses of Worship, 128
Guide for Developing High-Quality Emergency Operations Plans, 128
Guide for Developing High-Quality School Emergency Operations Plan, 128
Gulf Coast, 135, 311
Gulf of Mexico Alliance, 87b

H

Hail, 60–61
Haiti earthquake, 179, 182–183, 370b
Harrald, John, 416
Hart-Rudman Commission, 401, 418
HAST, *See Humanitarian Assistance Survey Team*
Hazard
 assessment, 70
Hazard annexes, 126
Hazard Mitigation Grant Program (HMGP), 89, 105, 105–106, 106f
Hazardous materials, 62–63
Hazards, 33, 48–50, 69–72, 75–76, 82–84
HAZUS, 83
HC, *See Humanitarian Coordinator*
Health and Human Services, Department of (DHHS), 317, 422–423
Health and medical sector, 292
Heat wave, 58
Hebgen Lake earthquake, 4
HESTEP, *See Hurricane Emergency Sales Tax Exemption Program*
Hewitt, Steve, 320
HMGP, *See Hazard Mitigation Grant Program*

H1N1 pandemic, 152
Hoffman, Bruce, 386
Holdeman, Eric, 194*b*
HOME Program, 315
Homeland security
 directors, 424
 higher education for, 140
 local government activity of, 425–428
 organizations, 407–419
 secretary of, 258–259, 269–270, 269, 270–271, 271, 272, 272*b*, 408–411
 state government activity of, 423–425
 structures, 429
 tribal government activity of, 423–425
Homeland Security, Department of (DHS), 132
 budget of, 436
 creation of, 381, 404
 directorates of, 413–414
 emergency management changes and, 12–16, 18
 FEMA in, 13, 13–14, 14, 14, 15, 18, 381, 398, 415*b*
 NPPD within, 406
 NTAS of, 431–436, 433*f*, 435*b*
 office funding of, 437*t*
 Office of Intergovernmental Affairs, 427–428
 Office of the Inspector General, 415
 offices of, 408
 operations centers, 265
 organizational chart of, 15*f*, 409*f*
 overview of, 407–419
 size of, 407–419
 terrorism management responsibility of, 398
Homeland Security Act of 2002, 13, 404
Homeland Security Advisory System (HSAS), 431–432, 431*f*

Homeland Security Exercise and Evaluation Program (HSEEP), [144–145](#), [145](#)
Homeland Security Grant Program (HSGP), [150](#)
Homeland Security Presidential Directive-3, [12–13](#), [431–432](#)
Homeland Security Presidential Directive-5, [247](#)
Homeland Security Presidential Directive-8, [148](#)
Homeland Security Presidential Directives (HSPDs), [403–404](#)
Homeowner Flood Insurance Affordability Act (HFIAA), [83–84](#), [97](#)
Housing and Urban Development, Department of (HUD), [26](#), [28](#), [315](#)
Housing sector, [292](#)
HSAS, *See* Homeland Security Advisory System
HSEEP, *See* Homeland Security Exercise and Evaluation Program
HSGP, *See* Homeland Security Grant Program
HSPDs, *See* Homeland Security Presidential Directives
HUD, *See* Housing and Urban Development, Department of
Humanitarian Assistance Survey Team (HAST), [361](#)
Humanitarian Coordinator (HC), [344–345](#)
Humanitarian organizations, [353–354](#)
Hunter, Cliff, [85](#)
Hurricane Agnes, [5](#), [93](#)
Hurricane Andrew, [9](#)
Hurricane App, [212](#), [213](#)
Hurricane Audrey, [4](#)
Hurricane Betsy, [4](#)
Hurricane Camille, [4](#), [5](#)
Hurricane Carla, [4](#)
Hurricane Diane, [4](#)
Hurricane Donna, [4](#)
Hurricane Emergency Sales Tax Exemption Program (HESTEP), [314](#)
Hurricane Floyd, [45](#)
Hurricane Hazel, [4](#)
Hurricane Hugo, [9](#)
Hurricane Ike, [11–12](#), [11f](#)

Hurricane Iniki, 9

Hurricane Irene, 40–45

Hurricane Katrina, 83*f*, 167–168, 180–181

- access and functional needs populations influenced by, 137–138
- Bush (George W.) administration and, 19*b*
- changes after, 2–3
- communication failures by government responders in, 159–160
- destruction of, 40, 45–46
- economic risk factors and, 73–75
- emergency management and, 16–18, 18–19, 19–21
- evacuation planning of, 133
- FEMA debacle of, 16–18, 18–19
- impact of, 40, 42*b*, 45
- insurance coverage and, 95
- leadership and, 164
- lessons learned from, 164
- New Orleans after, 17*f*, 18
- response to, 228–230, 228*b*
- situational awareness in, 167–168
- social risk factors and, 73–75
- storm surge of, 45–46
- Superdome as shelter after, 18
- terrorism preparedness/response influenced by, 406*b*

Hurricane Mitch, 40

Hurricane Pam exercise, 16

Hurricane Sandy, 26*f*, 34*f*, 40–45, 44*f*, 79, 161, 208*b*, 254*f*

- American Red Cross in, 212
- Building Sciences Mitigation Assessment Teams, 114
- case study, 313*b*
- FEMA after-action report, 242*b*
- FEMA response to, 25–26, 29*b*
- HUD's role in, 26

Long Term Recovery, 28
mitigation controversy reignited by, 103
NDRF applied by, 26, 26–27, 27–28, 28
Recovery, 26
recovery advisories, 114b
recovery program, 313b
response to, 233
rumor control, 203b
social media, 184
timeline of, 42b

Hurricane Sandy: Rumor Control, 214

Hurricanes, 14, 40–45, 41t

See also Storm surges

Hydraulic fracturing, 34

Hyogo Framework for Action (HFA), 338–339

I

IAEM, *See* International Association of Emergency Managers

IAIP, *See* Information Analysis and Infrastructure Protection

IASC, *See* Inter-Agency Standing Committee

IBHS, *See* Institute for Business and Home Safety

IC, *See* Incident Commander

ICC, *See* International Code Council

ICE, *See* Immigration and Customs Enforcement

ICP, *See* Incident Command Post

ICRC, *See* International Committee of the Red Cross

ICS, *See* Incident Command System

IEMC, *See* Integrated Emergency Management Course

IEMS, *See* Integrated Emergency Management System

IFIs, *See* International Financial Institutions

IFRC, *See* International Federation of Red Cross

IHP, *See* Individuals and Households Program

IMATs, *See* Incident Management Assistance Teams

IMF, *See International Monetary Fund*

Immigration and Customs Enforcement (ICE), 414–415

Impact fees, 91, 91–92

Implementing the 9/11 Commission Recommendations Act of 2007, 405

“Improving NYPD Preparedness and Response” (McKinsey & Company), 395

Incident Command Post (ICP), 238f, 262

Incident Command System (ICS), 168f, 237–240, 240b, 253–254, 396–397

Incident Commander (IC), 240

Incident Management Assistance Teams (IMATs), 267–268

Individual and Family Grant (IFG) Program, 305

Individual assistance recovery programs, FEMA, 304–308

Individuals and Households Program (IHP), 305–306

Information

- for communications, 191–193, 193–198
- oversight and, 320
- for recovery, 320
- social media providing, 193–198
- sources, 192, 192, 192, 192, 192, 192, 192, 192, 192
- UNOCHA tools and services of, 349

Information Analysis and Infrastructure Protection (IAIP), 13–14

Information sharing, 159, 167

Infrastructure sector, 292

INSARAG, *See International Search and Rescue Advisory Group*

Institute for Business and Home Safety (IBHS), 115

Insular area leader, 258

Insurance, 92–101

Integrated Emergency Management Course (IEMC), 140

Integrated Emergency Management System (IEMS), 7

Integrated Planning System, 21

Intelligence Reform and Terrorism Prevention Act of 2004, 405

Inter-Agency Standing Committee (IASC), 344, 345–346

Interface fires, 50

Intergovernmental Panel on Climate Change (IPCC), 58
International Association of Emergency Managers (IAEM), 115, 418
International Building Code (IBC), 84–86
International Code Council (ICC), 86
International Committee of the Red Cross (ICRC), 354
International disaster management, 331, 375
International disasters, 332–334
International Federation of Red Cross (IFRC), 354
International financial institutions (IFIs), 362–374
International Monetary Fund (IMF), 368–374
International organization (IO), 353
International Red Cross, 354–357
International Search and Rescue Advisory Group (INSARAG), 347
International Strategy for Disaster Reduction (ISDR), 338
IO, *See* International organization
ISDR, *See* International Strategy for Disaster Reduction

J

Japanese earthquake and tsunami, 183
JFO, *See* Joint Field Office
JIC, *See* Joint Information Center
JOC, *See* Joint Operations Center
John Warner National Defense Reauthorization Act, 232–233
Johnson, Harve, 21
Joint Field Office (JFO), 265, 269b, 290–291
Joint Information Center (JIC), 206–207, 265
Joint Operations Center (JOC), 265
Joint Task Force Commander, 270
Joint Task Force (JTF), 361
Jones, Erie, 6
Joplin Tornadoes, 25, 47, 183–184, 268b
JTF, *See* Joint Task Force

Justice, Department of (DOJ), 8, 421

K

Kaczynski, Ted, 384, 387

Kennedy, John F., 4

Kennedy administration, 4, 399

Kenya embassy bombings, 390

Kettl, Don, 416, 418

Khobar Towers bombing, 389

KKK, *See Ku Klux Klan*

Kobe earthquake, 37–38, 335

Kruski, Walt, 310*f*

Ku Klux Klan (KKK), 383

Kurbegovich, Muharem, 384

L

Labor unions, 384

Land subsidence, 52

Landslides, 51

Land-use planning, 86–90, 319

Lateral blasts, 55

Lateral spreads, 51

LDRM, *See Local Disaster Recovery Managers*

Leadership, 164–166, 320, 441–442

 recovery coordination and, 285–291

Leadership in Energy and Environmental Design (LEED) rating system, 90

Left-wing terrorism, 386–387

Legal services, 307

Legislation, action, and authorities, for terrorism, 398–399

Lending instruments, 364–366

Levees, 102–103, 103*f*

Lieberman, Joe, 19–20

Lightning, 60

Liquefaction, 51
Loan reallocations, 365
Local Disaster Recovery Managers (LDRM), 299–300, 302
Local governments, 250, 425–428, 444
Local level, 230–231, 425–428
Logistics Support Unit (LSU), 348
Loma Prieta earthquake, 9
London transit bombings, 180
Lone-wolf terrorists, 384–385
Long-Term Community Recovery, 294
Long-Term Disaster Recovery Working Group, 295
Long-term recovery, 283
Long-term recovery planning, community, 320
Los Angeles City Fire Department (LAFD), 142, 142
LSU, *See* Logistics Support Unit

M

MA, *See* Mission Assignment
Macy, John, 7
Mass movements, 50–52
Matching Grant Program, 314
Matesky, George, 384
MATS, *See* Mitigation Assessment Teams
MATTs, *See* Mobile Air Transportable Telecommunications System
Mayfield, Max, 16, 16
McConnell, Mike, 416
McCoy, Steve, 396
MCDU, *See* Military and Civil Defense Unit
McKinley, William, 383–384
McKinsey & Company, 395
McNamara Brothers, 384
McVeigh, Timothy, 384, 388–389

MDAB, *See* Midwestern Disaster Area Bonds

Media, 159, 159, 159–160, 170–172, 201
See also Social media

Meese, Ed, 8

Meltdowns, 63

Melville, Sam, 384

MERS, *See* Mobile Emergency Response Support

Mertren, Kenneth H., 372

Messengers, communications, 198–199

Metropolitan Medical Response System (MMRS), 397

Microblogs, 174

Midwest floods, 10, 10b, 93

Midwestern Disaster Area Bonds (MDAB), 320

Mikulski, Barbara, 19–20

Military, U.S., 361–362

Military and Civil Defense Unit (MCDU), 348

Mission Assignment (MA), 262, 298–299

Mission/Outreach Support Group, 303

Missouri Humane Society, 308

Mitigation, 72–73, 117–118, 125–126
See also Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program

agencies providing support for, 113–114

definition of, 79, 125–126

design and construction applications used in, 84–86

in emergency management, 79, 80, 80, 80, 80–81

entities focusing on, 117–118

federal programs of, 105–117

FEMA initiatives of, 113b

FEMA programs of, 105

FEMA’s abdication on, 26–27

financial incentives used in, 90–92

free-standing investment projects for, 366

function of, 80

goal of, 81–82
hazard identification and mapping used in, 82–84
Hurricane Sandy reigniting controversy of, 103
impediments to, 104–105
insurance used in, 92–101
land-use planning used in, 86–90
nonfederal grant programs for, 115
overview of, 79–81
players in, 80
preparedness v., 125–126
programs, 105, 111, 115
recovery and, 80, 80, 80–81
skills and tools for, 80
structural controls used in, 102–104
tools, 81–104
UN promoting, 338
UNOCHA measures of, 349
wildfire, 85b

Mitigation Advisor, 301

Mitigation Assessment Teams (MATS), 114–115

MMC, *See* Multi-Hazard Mitigation Council

MMI, *See* Modified Mercalli Intensity scale

MMRS, *See* Metropolitan Medical Response System

Mobile Air Transportable Telecommunications System (MATTs), 274, 274, 274–275

Mobile Disaster Recovery Center (MDRC), 310f

Mobile Emergency Response Support (MERS), 274, 274, 274–275

Modified Mercalli Intensity scale (MMI), 38, 39t

Mohammed, Khalid Sheikh, 388, 392

Monitoring, 203

Mudflows, 51

Multi-Hazard Mitigation Council (MMC), 117–118

Mumbai terrorist attacks, 182

Myanmar cyclone, 181–182

N

Napa County Flood Control and Water Conservation District (NCFCWCD), 91

Napa earthquake, 37*f*

Napa River flood protection project, 91*b*

Napolitano, Janet, 2–3, 22, 431–432, 432–436

Nation Preparedness Goal, 247–248

National Association of State Directors of Emergency Preparedness, 6

National Code, 86

National Commission on Terrorism, 401

National Counterterrorism Center (NCTC), 264

National Disaster Recovery Framework (NDRF), 26–27, 28, 293, 295, 295, 295, 295–296, 296, 296, 296–297, 298, 329

key NDRF staff, 298–304

principles, 297–298

National Disaster Recovery Support (NDRS), 298, 299–300

National Disaster Reservists, 272–275

National Earthquake Hazards Reduction Program (NEHRP), 9, 112

National Emergency Grants, 317–318

National Emergency Response Teams (ERT-Ns), 267

National Emergency Training Center (NETC), 8

National Exercise Program (NEP), 146*b*

National Fire Academy (NFA), 140–141

National Fire Protection Association (NFPA), 92

National Flood Insurance, 29*b*

National Flood Insurance Program (NFIP), 4, 4–5, 5, 5, 5, 17, 23, 86, 90–91, 92–93, 93, 93, 93–95, 95, 96, 110–111

National Governors Association (NGA), 6, 121–122, 424–425

National Governor's Association (NGA), 232–233

National Guard, 19, 232–233, 233, 422

National Hazard Mitigation Association (NHMA), 115

National Homeland Security Agency (NHSA), 401

National Hurricane Center, 16, 45
National Hurricane Program, 112–113
National Incident Management System, 149
National Incident Management System (NIMS), 15, 127, 168, 168*b*, 228–230, 247, 248*b*
National Information Management System (NIMS), 21
National Infrastructure Coordinating Center (NICC), 264
National Institute for Building Sciences (NIBS), 117–118
National Institutes of Science and Technology (NIST), 112, 420–421
National Joint Terrorism Task Force (NJTTF), 264
National Level Exercise program (NLE), 145–146
National Military Command Center (NMCC), 264
National Mitigation Framework, 113–114
National Oceanographic and Atmospheric Administration (NOAA), 420–421
National Operations Center (NOC), 263
National Planning Frameworks, 149
National Preparedness Directorate, of FEMA, 148, 150
National Preparedness Guidelines, 147
National Preparedness Report, 149–150, 149, 149*b*
National Preparedness System, 132–133, 149
National Prevention Framework, 113
“National Prevention Framework” (DHS), 132
National Processing Service Centers (NPSCs), 304–308
National Protection and Programs Directorate (NPPD), 406
National Protection Framework, 132
National Response Coordination Center (NRCC), 263
National Response Framework (NRF), 21, 144–145, 148, 228–230, 246–251, 250*b*, 256–257, 257, 257–261, 277, 294, 295, 301
National Response Plan (NRP), 21, 294
National Science Foundation (NSF), 112
National Security Staff (NSS), 420
“A National Strategy for Integrated Public Warning Policy and Capability” (PPW), 432

National Terrorism Advisory System (NTAS), 431–432, 433f, 435b

National Voluntary Organizations Active in Disaster (NVOAD), 234, 235–237, 318–319

National Voluntary Relief Organizations, 318–319

National Weather Service (NWS), 16, 156

National Windstorm Impact Reduction Program, 112

Nationalist terrorism, 386

Natsios, Andrew, 333–334

Natural disasters, 81, 335, 379, 380

Natural hazards, 34–61

NCFCWCD, *See* Napa County Flood Control and Water Conservation District

NCTC, *See* National Counterterrorism Center

NDRF, *See* National Disaster Recovery Framework

NEHRP, *See* National Earthquake Hazards Reduction Program

NEHRP Reauthorization Act of 2004, 112

Neighborhood Development Floating Zones, 90

NEP, *See* National Exercise Program

Nepal earthquake, 185–186

NESIS, *See* Northeast Snowfall Impact Scale

NETC, *See* National Emergency Training Center

New media, *See* Social media

New Orleans, 16, 16, 16, 16, 17, 17f, 18

New York City, 214, 313b

New York City Business Recovery Resources Emergency Loans, 313–314

New York City Community Outreach Teams, 154b

New York City Police Department (NYPD), 395

New York City Rapid Repairs Program, 313

NFA, *See* National Fire Academy

NFIP, *See* National Flood Insurance Program

NFPA, *See* National Fire Protection Association

NGA, *See* National Governors Association

NGOs, *See* Nongovernmental organizations

NHMA, *See* National Hazard Mitigation Association

NHSA, *See* National Homeland Security Agency
NIBS, *See* National Institute for Building Sciences
NICC, *See* National Infrastructure Coordinating Center
Nichols, Terry, 384, 388–389
NIMS, *See* National Incident Management System, National Information Management System
NIMS Compliance Assistance Support Tool (NIMSCAST), 147
9/11 Commission, 404–405
Nisqually earthquake, 12, 108b
NIST, *See* National Institutes of Science and Technology
NIU shootings, *See* Northern Illinois University shootings
Nixon, Richard, 5
NJTTF, *See* National Joint Terrorism Task Force
NLE, *See* National Level Exercise program
NMCC, *See* National Military Command Center
NOAA, *See* National Oceanographic and Atmospheric Administration
Noah, 1
NOC, *See* National Operations Center
Nonfederal mitigation grant programs, 115
Nongovernmental organizations (NGOs), 234–235, 234f, 250, 318, 352–357, 429
Nongovernmental organizations (NGOs), 260
Northeast Snowfall Impact Scale (NESIS), 56, 56t
Northern Illinois University (NIU) shootings, 181
Northridge earthquake, 10, 38
NPPD, *See* National Protection and Programs Directorate
NPSCs, *See* National Processing Service Centers
NRC, *See* Nuclear Regulatory Commission
NRCC, *See* National Response Coordination Center
NRF, *See* National Response Framework
NRP, *See* National Response Plan
NSF, *See* National Science Foundation
NSS, *See* National Security Staff
NTAS, *See* National Terrorism Advisory System

Nuclear agents, 68
Nuclear and radiation accidents, 63–64
Nuclear attack planning, 8–9
Nuclear blasts, 68
Nuclear facilities, 68–69
Nuclear power plants, 63
Nuclear reactor, 63
Nuclear Regulatory Commission (NRC), 63
Nunn-Lugar-Domenici Act, 400
NVOAD, *See* National Voluntary Organizations Active in Disaster
NWS, *See* National Weather Service
NYPD, *See* New York City Police Department

O

Obama, Barack, 2–3, 22–24, 24–28, 29, 268, 295, 416
Obama administration, 22–24, 24–28, 29
OFDA, *See* Office of Foreign Disaster Assistance
Office of Civil and Defense Mobilization, 3–4
Office of Civil Defense, 4
Office of Conflict Management and Mitigation (CMM), 360
Office of Defense Mobilization, 3–4, 399
Office of Emergency Preparedness, 3–4, 4, 399
Office of Food for Peace (FPD), 360
Office of Food Security and Emergency Preparedness, 420
Office of Foreign Disaster Assistance (OFDA), 358–360
Office of Health Affairs (OHA), 415
Office of Homeland Security, 12, 402
Office of Intergovernmental Affairs, 427–428
Office of Military Affairs (OMA), 361
Office of National Preparedness (ONP), 12
Office of Peacekeeping and Humanitarian Affairs (PK/HA), 360
Office of Preparedness, 15

Office of the Secretary of Homeland Security, 408–411
Office of Transition Initiatives (OTI), 360
OHA, *See* Office of Health Affairs
Oklahoma City bombing, 11, 140, 226b, 384, 385f, 388–389
Oklahoma Office of Homeland Security (OKOHS), 155
Oklahoma’s Regional Response System, 155b
Old media, *See* Traditional media
OMA, *See* Office of Military Affairs
O’Neill, Tip, 104
ONP, *See* Office of National Preparedness
On-Site Operations Coordination Center (OSOCC), 345
Operation Stonegarden (OPSG), 151
Operations coordination, NRF, 262–265
OPSG, *See* Operation Stonegarden
Organization, for preparedness, 124
Organizational chart, 15f, 168f
Orlando nightclub shooting, 391–392
OSOCC, *See* On-Site Operations Coordination Center
OTI, *See* Office of Transition Initiatives
Oversight, 320

P

Pallone, Frank, 103
Panetta, Leon, 233
PAOs, *See* Public Affairs Officers
Partnership for Public Warning (PPW), 432
Partnerships, 443
PATRIOT Act, 403
Paulison, David, 21
PDA, *See* Preliminary damage assessment
PDD 39, *See* Presidential Decision Directive 39
PDM, *See* Pre-Disaster Mitigation Program

Performance-based design, 86

Permanent work, 309

PFA, *See* Public Finance Authority

PFO, *See* Principal federal official

Phinney Ridge Neighborhood Center Home Improvement Program, 110

Photo sharing, 175

PIOs, *See* Public information officers

PKEMRA, *See* Post-Katrina Emergency Management Reform Act

PK/HA, *See* Office of Peacekeeping and Humanitarian Affairs

Plan Analysis Tool, 127

Planning process, 126–128

PNP organizations, *See* Private nonprofit organizations

Podcasts, 175

Port Security Grant Program (PSGP), 151

Posse Comitatus Act, 398

Post-Disaster Redevelopment Plan, 326

Post-Katrina Emergency Management Reform Act (PKEMRA), 2–3, 20, 21, 21–22, 381, 405–406

Poverty, 73–75

PPW, *See* Partnership for Public Warning

Pre-Disaster Mitigation Program (PDM), 107–114

Pre-disaster recovery planning (PDRP), 321–328
benefits of, 321b

Pre-Event Planning for Post Event Recovery (PEPPER), *See* Pre-disaster recovery planning (PDRP)

Preliminary damage assessment (PDA), 245–246

Preparedness
all-hazards, 122–123
components of, 122–125
cycle, 122–125
definition of, 121–122, 125–126
education/training for, 124–125, 141–143
elements of, 153

equipment used in, 124, 138–139
evaluation/improvement in, 125, 146–148
exercise for, 125
grant programs, 150
importance of, 121–122
mitigation v., 125–126
NRF guiding, 148
organization for, 124
overview of, 121–122, 153
planning cycle of, 122–124, 153
public, 141–143
for terrorism, 150, 150–151
training for, 124–125
UNOCHA measures of, 349
as whole community effort, 148–149

Preparedness Against Domestic Terrorism Act of 2001, 402

Prescribed fires, 50

Pre-Scripted Mission Assignments (PSMAs), 262

Presidential Decision Directive (PDD) 39, 399–400

Presidential disaster declaration process, 225–226, 240–246, 251, 251–252, 251, 252, 282

Prince William Sound, Alaska, 4

Principal federal official (PFO), 269–271, 272b

Private nonprofit (PNP) organizations, 308–309

Private sector, 152, 153, 153, 153, 251, 260–261, 428

Private Sector Division, of FEMA, 152

Private voluntary organization (PVO), 353

PRM, *See Bureau for Population, Refugees, and Migration*

Project Impact: Building Disaster-Resistant Communities, 11, 11b, 107–114

Property acquisition, 86, 87b, 90

PSCP, *See Port Security Grant Program*

PSMAs, *See Pre-Scripted Mission Assignments*

PS-PREP, *See Voluntary Private Sector Preparedness Accreditation and*

Certification Program

- Public Affairs Officers (PAOs), 265
- Public Assistance Grant Programs, 308–311
- Public Assistance Programs, 106*f*
- Public Finance Authority (PFA), 320, 320
- “A Public Guide to the NTAS” (DHS), 432–436
- Public information, 168*b*
- Public information officers (PIOs), 169, 198, 199
- Public laws, 399
- Public preparedness education, 141–143
- PVO, *See Private voluntary organization*

R

- Radiation accidents, 63–64
- Radiological agents, 67–68
- Radiological dispersion device (RDD), 67–68
- RDD, *See Radiological dispersion device*
- Ready.gov, 141–142
- Reagan, Ronald, 8, 399
- Rebuild Northwest Florida, 115
- Reconstruction Finance Corporation, 3
- Recovery, 281
 - See also Insurance*
 - case study, 313*b*, 316*b*
 - classification of, 281
 - communications plan for, 190
 - Continuum, 285*f*
 - description of, 285*f*
 - federal agency disaster, 314–318
 - goal of, 281
 - HUD’s role of, 28, 315
 - Hurricane Sandy, 313*b*
 - Individual Assistance programs for, 304–308

information for, 320
JFO in, 290–291
leadership in, 320
long-term, 283
long-term planning for, 320
mitigation and, 80, 80, 80–81
NDRF for, 293, 293, 329
oversight for, 320
overview of, 282–284
planning, 321–328
planning tools in, 319–320
short-term, 283
UNDP unit of, 342–343

Recovery Action Team (RAT), 289

Recovery committee, 287–288

Recovery consultation, 288

Recovery coordination and leadership, 285–291

- Monroe County, Florida (pre-disaster plan), 289–290
- Ocean County, NJ, 288–289

Recovery Coordination Group, 303

Recovery organization, 288

Recovery sectors, 291–292

Recovery Support Functions (RSFs), 296

Recovery taskforce or task group, 288

Redesign, 365

Regional commissions, 350

Regional Emergency Response Teams (ERT-As), 267

Regional Response System (RRS), 155*b*

Relief, 336

Religious terrorism, 386

Reorganization Plan Number 3, 6, 399

Resiliency, 445

Resiliency and climate change, 115–117

“Resilient Coastal Development through Land Use Planning: Tools and Management Techniques in the Gulf of Mexico” (Gulf of Mexico Alliance), 87*b*

Response, 228, 251–252, 252, 252

case study, 226*b*, 268*b*

classification of, 281

coordination as issue of, 334

definition of, 281

ESF for, 252–261

federal, 240–246, 247, 259

federal assistance in, 251–252

governors in, 225, 225–226, 232, 232–233, 233, 240–246, 257

to Hurricane Katrina, 228–230, 228*b*, 234–235, 234*f*

to Hurricane Sandy, 233

international disaster, 333–334

issues influencing, 334–337

local level disaster, 230–231

National Guard in, 232–233, 233

nations’ capacity for, 331

NRF guiding, 226

officials, 259, 269–275

overview of, 225–230, 257–261

to September 11, 2001, 228

state, 232–233

to terrorism, 226*b*

training for, 231–232

volunteer groups, 233–237

Response 95, 16

Retroactive financing, 365

Richter, Charles, 38

Richter scale, 38

Ridge, Tom, 12, 13, 13–14, 14–15

Right-wing terrorism, 387

Risk management, 69–72, 75–76

Risk MAP, *See Risk Mapping, Assessment, and Planning*

Risk Mapping, Assessment, and Planning (Risk MAP), 84

Risks

See also Mitigation

assessment of, 33

communication, 141–143

of earthquakes, 37

economic factors, 73–75

of floods, 35–37

identification of, 33

matrix, 71

mitigation tools reducing, 82

modeling, 73

of natural hazards, 34–61

prioritization of, 71

product of, 33

representation of, 33

social factors, 73–75

of storm surges, 45

of tornadoes, 46–47

of tsunamis, 52–54

vulnerability, 71

wildfires as, 92

Riverton, IL, flooding of, 89b

“Road Map for National Security: Imperative for Change” (Hart-Rudman Commission), 401

Robert T. Stafford Disaster Relief and Emergency Assistance Act, *See Stafford Act*

Roberts, 418–419

Rockfalls, 52

RoE, *See Rules of Engagement*

Romney, Mitt, 25–26
Roosevelt, Franklin, 3
RSF Field Coordinator, 302
RSF National Coordinator, 301–302
RSFs, *See* Recovery Support Functions
Rudolph, Eric, 385–386, 400
Rules of Engagement (RoE), 361
Rumor control, 203b

S

Safe rooms, 48, 49f
Saffir-Simpson scale, 40, 41t
San Bernardino attack, 391
Sandy Recovery Improvement Act of 2013, 27t, 312b
Sargent, Steve, 85, 85
SBA, *See* Small Business Administration
Science and Technology (S&T), 13–14
SCO, *See* State Coordinating Officer
SDRC, *See* State Disaster Recovery Coordinators
Sea, Lake, and Overland Surges from Hurricanes (SLOSH), 46
Seattle earthquake, 108–110
Secretary of Defense, 259
Secretary of Homeland Security, 258–259, 269–270, 269, 270–271, 271, 272, 272b, 408–411
Secretary of Labor, 317–318
Secretary of State, 259
Secure It, 110
Sendai Framework for disaster risk reduction, 339–340
Senior Federal Law Enforcement Official (SFLEO), 270
Senior Health Official, 270
September 11, 2001, 64–65, 73, 139, 152, 228, 315, 377, 390–391, 392–398
Severe Repetitive Loss (SRL), 111
Severe winter storms, 55–56

SFHAs, *See* Special Flood Hazard Areas
SFLEO, *See* Senior Federal Law Enforcement Official
Shelter sector, 292
Shelter-in-place, 85*b*
Shields, 55
SHMOs, *See* State Hazard Mitigation Officers
Short-term recovery, 283
SHSP, *See* State Homeland Security Program
Sicarii, 382
Single Incident Command, 239
Single-interest terrorism, 387
SIOC, *See* Strategic Information and Operations Center
Situational annexes, 126
Situational awareness, 163, 167–169, 177–178
Skipper, Mark, 396
SLOSH (Sea, Land, Overland Surges from Hurricanes), 46
Small Business Administration (SBA), 315–316
SMAUG methodology, 72
Social media, 159, 159, 159–160, 172, 172, 172, 172–173, 174, 174, 174–175, 174, 175, 175, 175, 193–198, 201, 201
 as disaster communications tool, 179–180
 and disasters, 176–179
 in emergency management, 199*b*, 201*b*
 FEMA and, 28–29
 operationalizing social media for preparedness, response and recovery, 205*b*
 saving lives in Haiti, 214*b*
Social Media & Emergency Management (SMEM), 188
Social network, 174
Social risk factors, 73–75
Sovereignty, 335
Special Flood Hazard Areas (SFHAs), 97, 309
Special needs, 135–138, 136, 138*b*
Special populations, 74

SPR, *See* State Preparedness Report
SRL, *See* Severe Repetitive Loss
S&T, *See* Science and Technology
Staff training, 201–202
Staffing, communications and, 199–201
Stafford Act, 27–28, 27*t*, 107, 241*f*, 269, 271, 293, 312–313, 379, 399, 407
State, Department of, 421
State, Tribal, and Territorial Disaster Recovery Coordinators (S/TDRCs), 302
State Coordinating Officer (SCO), 270, 272, 294–295
State Disaster Recovery Coordinators (SDRC), 302
State Farm Insurance, 95–96
State government, 250, 423–425
State Hazard Mitigation Officers (SHMOs), 115
State Homeland Security Program (SHSP), 150
State Preparedness Report (SPR), 147, 233
State response, 232–233
State sovereignty, 335
State sponsored terrorism, 386
“States’ Homeland Security Priorities” (NGA), 424–425
Stewart McKinney-Robert Stafford Act, 9
Stickney, Wallace, 9
Storm surges, 40, 45–46
Strategic Foresight Initiative (SFI), 29–30, 441
Strategic Information and Operations Center (SIOC), 264
Strategy 2020, 356
Structural controls, 102–104
Structural fires, 61–62
 archeological discoveries, 61
Suiter, Lacy, 6
Sunday Bomber, 384
Sununu, John, 9
Superdome, 18

Surface fires, 48–49
Surge Capacity Project, 348

T

Tabletop exercise, 144
TAGs, *See Technical Assistance Groups*
Taking, 105
Tanzania embassy bombings, 390
Target Capabilities List (TCL), 147
Tax, 90, 308
TCL, *See Target Capabilities List*
TDRC, *See Tribal Disaster Recovery Coordinators*
Team Rubicon, 236b, 318f
Technical assistance, from World Bank, 366–368
Technical Assistance Groups (TAGs), 360
Technological disasters, 81, 335, 379, 380
Technological hazards, 61–64
Technology, communication and, 443
Tennessee Valley Authority, 3
Territorial leader, 258
Terrorism
See also CBRN incidents, CBRN weapons (chemical, biological, radiological, nuclear), Oklahoma City Bombing, September 11, 2001
anarchist, 387
categories of, 65–66, 386–388
commissions on, 401
containment of, 65
as criminal act, 387
definition of, 64, 382, 383b
DHS's management responsibility regarding, 398
emergency management and, 12–16, 379–380
emergency management changes from, 1–2, 380–381
FEMA and, 11, 12, 19, 28

history of, 378–379, 381–388
Hurricane Katrina and, 406*b*
legislation, action, and authorities for, 398–399
nationalist, 386
natural disasters' differences with, 379, 380
overview of, 64, 378–379, 380, 437–438
preparedness for, 150, 150–151
protection from, 379
religious, 386
response to, 226*b*
right-wing, 387
single-interest, 387
state sponsored, 386
statutory frameworks for, 398–407
technological disasters' differences with, 379, 380
as technological hazard, 64–72
in U.S., 64, 64–65, 65, 65, 65–66
Terrorism Incident Annex, 400
Terrorist Finance Tracking Program (TFTP), 423
Terrorists, 382, 394
Three Mile Island, 6, 63–64
Thunderbolt exercise, 143*f*
Thunderstorms, 60
Titan Systems Corporation, 396
Tornadoes, 25, 46–48, 48*f*
Townsend, Frances, 19
Traditional media, 194
Training, 124–125, 201–203, 231–232
Transportation, Department of (DOT), 135, 317
Transportation Security Administration (TSA), 412
Treasury, Department of, 423
Tribal Disaster Recovery Coordinators (TDRC), 302

Tribal governments, 250, 423–425
Tribal leader, 258
Tropical depressions, 40
Tropical storms, 40
Tropical waves, 40
Truman, Harry, 13
Tsunamis, 52–54, 54*b*
Japan, 53*f*
Turner, Libby, 25
Tuscaloosa tornado devastation, 183–184
Twitter, 176, 194, 213, 214
2011 Japanese earthquake, 63
2014–18 FEMA Strategic Plan, 29–30

U

UASI, *See* Urban Area Security Initiative
UCG, *See* Unified Coordination Group
UN, *See* United Nations
UN Centre for Regional Development (UNCRD), 350
Unabomber, 384, 387
UNCRD, *See* UN Centre for Regional Development
UNDAC, *See* United Nations Disaster Assessment and Coordination team
UNDP, *See* United Nations Development Programme
UNICEF, *See* United Nations Children's Fund
Unified Command, 239, 377
Unified Coordination Group (UCG), 269*b*
Unions, 384
United Nations Children's Fund (UNICEF), 350
United Nations Development Programme (UNDP), 342–343
United Nations Disaster Assessment and Coordination team (UNDAC), 347
United Nations Office for Disaster Risk Reduction (UNISDR), 341
United Nations Office for the Coordination of Human Affairs (UNOCHA), 344–349

United Nations (UN), 334–335, 338, 344–349
United States Commission on National Security in the 21st Century (USCNS/21), 401
United States (U.S.), 34f, 36t, 38, 41t, 46, 65–66, 357–362
UNOCHA, *See* United Nations Office for the Coordination of Human Affairs Updating, 203–207
Urban Area Security Initiative (UASI), 150–151
U.S, *See* United States
U.S. Agency for International Development (USAID), 333–334, 358f, 372
U.S. Department of Agriculture (USDA), 420
U.S. Fire Administration (USFA), 8, 141
U.S. Geological Survey (USGS), 112
US Coast Guard, 411
US Department of Veterans Affairs (VA), 213
US Secret Service, 412
USA Freedom Act, 406–407
USA PATRIOT Act, 403
USAID, *See* U.S. Agency for International Development
USCIS, *See* Citizenship and Immigration Services
USCNS/21, *See* United States Commission on National Security in the 21st Century (USCNS/21)
USDA, *See* U.S. Department of Agriculture
USFA, *See* U.S. Fire Administration
USGS, *See* U.S. Geological Survey
Ushahidi, 183
Ushahidi Haiti Project, 218–219
Utilities sector, 292

V

Video sharing, 175
Viola, Linda, 89
Virginia tech shootings, 181
Virtual On-Site Operations Coordination Centre (Virtual OSOCC), 347–348

Virtual Social Media Working Group (VSMWG), 162, 204, 204*b*, 205–207, 205
VOADs, *See* Voluntary Organizations Active in Disasters
Volcanic ash, 55
Volcanic eruptions, 55
Volcanoes, 55
Volkmer, Harold, 107
Voluntary agencies, 444
Voluntary Organizations Active in Disaster (VOAD), 318–319, 318*f*
Voluntary Private Sector Preparedness Accreditation and Certification Program (PS-PREP), 153
Volunteer groups' response, 233–237
Volunteer Organizations Against Disasters (VOADs), 234, 234*f*
Vulnerability, 123

W

Walker, David, 418–419
Wallace, Alan, 396
WFP, *See* World Food Programme
White House, 420
WHO, *See* World Health Organization
Whole Community approach, 24, 24–28, 29–30, 128–131, 129*b*
A Whole Community Approach to Emergency Management: Principles, Themes and Pathways for Action (FEMA), 129*b*, 130
Wiki, 175
Wildfires, 48–50, 85*b*, 92
 See also Mitigation
Witch Fire, 85*b*
Witt, James Lee, 10–12, 16, 107, 418
Workforce Investment Act of 1998, 317–318
World Bank, 362–364
World Food Programme (WFP), 351–352
World Health Organization (WHO), 352
World Meteorological Organization (WMO), 58

World Trade Center

1993 bombing of, [388](#), [394](#)

Wormuth, [418](#)

Write Your Own program, [95](#)

Y

100-year floodplain, [36–37](#)

Yousef, Ramzi, [388](#)

YouTube, [175](#), [196](#)

Z

Zoning, [320](#)