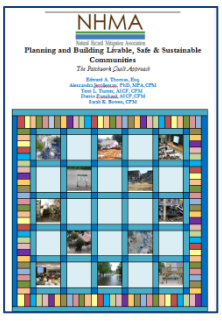
Building Your Roadmap to a Disaster Resilient Future



Next Generation of the *Patchwork Quilt Approach*

Version 1.0 (April 2017)

NHMA
Natural Hazard Mitigation Association

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Foreword

Building Your Roadmap to a Disaster Resilient Future is produced by the Natural Hazard Mitigation Association (NHMA). NHMA is a non-profit organization of professionals dedicated to reducing the impacts of natural disasters. They provide practical advice and resources to all those involved in the development of Disaster Risk Reduction (DRR) Strategies. NHMA serves as a respected voice in hazard mitigation policy both in the United States (U.S.) and throughout the world. The Association represents the interests of communities, governments, the research community, the insurance industry, and the fields of engineering, emergency response, water resources, planning and many other mitigation related fields.

For more information about NHMA, or to join, please visit: http://nhma.info

Building Your Roadmap to a Disaster Resilient Future intends to help vital community stakeholders navigate through the varied and at times bewildering array of pre- and post- disaster resources and programs available to reduce the impact of natural, technological, and human made events on the human built environment. It is based on a concept Edward A. Thomas Esq. developed in a White Paper while serving in Iowa as Federal Coordinating Officer, the President's representative, following the Great Midwest Floods of 1993. Previous editions of that White Paper, titled *Planning and Building Livable, Safe & Sustainable Communities, The Patchwork Quilt Approach*, and more commonly referred to as the *Patchwork Quilt*, were published by the Association of State Floodplain Managers (ASFPM) in 2006, 2007, 2008, and 2009. The original materials for the White Paper were contained in an article Mr. Thomas authored with Barbara Yagerman of the Federal Emergency Management Agency (FEMA), and published by the ASFPM in 1994.

Building Your Roadmap to a Disaster Resilient Future builds on *Living Mosaic: A Path Forward* assembled and produced by NHMA in 2015. The successor to the *Patchwork Quilt*, the *Mosaic* provides information needed to inform DRR requirements at the local level. It facilitates efforts for committed community representatives to engage in the discussion of how the impact and volume of disasters can be reduced through local action. Both the *Mosaic* and the *Patchwork Quilt can be found* on the NHMA website.

Contents of *Building Your Roadmap to a Disaster Resilient Future* are not necessarily endorsed by any firm or agency. The document does not provide legal advice.

Acknowledgements

Building Your Roadmap to a Disaster Resilient Future, developed by the NHMA under a 2015 Cooperative Agreement with FEMA, (U.S.DHS/FEMA Grant No. EMW-2015-CA-APP-00091) is intended to be a tool and a key part of the DRR Ambassador Curriculum. The NHMA DRR Ambassador Curriculum provides multidisciplinary educational resources, self-study curricula, and training workshops for community leaders and others from the private, public, academic and other vested sectors to engage and lead community-level disaster risk reduction dialogue.

The *Roadmap* provides its users with practical solutions, approaches, applications, and resources as they move toward a more disaster resilient future for their communities.

This document builds on a strong foundation from members of NHMA. It encompasses information found in the latest version of the *Patchwork Quilt*, authored by Edward A. Thomas, Esq.; Alessandra Jerolleman, PhD, MPA, CFM; Terri L. Turner, AICP, CFM; Darrin Punchard, AICP, CFM; and Sarah K. Bowen, CFM, revised in 2012 and then updated in 2014. Updates were made by Mr. Thomas, with the assistance of Jennifer K. Dunn, CFM, the US Army Corps of Engineers (USACE) Silver Jackets Program Manager, and Dr. Jerolleman, Executive Director, NHMA at that time. Document changes to the *Patchwork Quilt* were also based in part on a White Paper, *Preventing Human Caused Disasters*, developed by Mr. Thomas and Ms. Bowen.

Mr. Thomas is a Floodplain Manager, and Disaster Response and Recovery Specialist, who is also an Attorney. His primary concern is the prevention of misery to disaster victims, the public purse, and to the environment. Floodplain Management through the Law is his chosen method of accomplishing this goal. Dr. Jerolleman is a Floodplain Manager, Planner, and Community Resilience Specialist. Ms. Turner is a Planner, Floodplain Manager, and Hazard Mitigation Specialist. Mr. Punchard is a Planner and Floodplain Manager. Ms. Bowen is a Planner and Floodplain Manager.

The *Roadmap* also draws heavily on the successor to the *Patchwork Quilt,* the *Living Mosaic: A Path Forward.* Those most involved in producing *A Living Mosaic* were Katie Skakel, CFM Lead Planning Consultant; Tim Blagg; Heidi Carlin, CFM; Jim Mullen, Kim Thiele, Jackie Sterner; Michael Rupp of the Oregon Planner's Consortium; Jo Ann Howard, JD, Erin Capps, JD, and Stephanie Urquidez of H20 Partners; Don Watson, FAIA, CIP, of EarthRise design. Further, Mr. Thomas, President, NHMA; and the NHMA Project Management Team consisting of Mr. Thomas, David Mallory, PE, CFM, Molly Mowery, AICP, Ms. Capps, and Ms. Skakel.

In addition to the *Patchwork Quilt*, the basis for the *Mosaic* is found in the *Lessons Learned* White Paper, the foundation for the Disaster Risk Reduction Ambassador Curriculum. That document is available on the NHMA website: www.nhma.info

Building Your Roadmap to a Disaster Resilient Future acknowledges the involvement in its development by the current members of the Project Management Team: Mr. Thomas, Ms. Capps, David L. Miller, Jim Murphy, PE, CFM, Rebecca Joyce, Thomas S. Hughes, Mr. Mallory, Mr. Mullen, Shannon Burke, and Pete Baston.

Wall of Fame for Future Contributions

In order to maintain its usefulness as a functional tool for communities engaged in disaster risk reduction, the document will require constant updating to stay current with changes in this process. Future versions of the *Roadmap* will include a "Wall of Fame," listing those persons who have assisted in keeping the *Roadmap* current by making observations, and suggesting meaningful updates and better approaches to the concept of disaster risk reduction. Please consider writing to Ed Thomas, President of the NHMA, to offer your comments and suggestions at Ed.nhma@gmail.com.

1 Why Start This Journey?

An Invitation to Travel the Road to Disaster Resilience

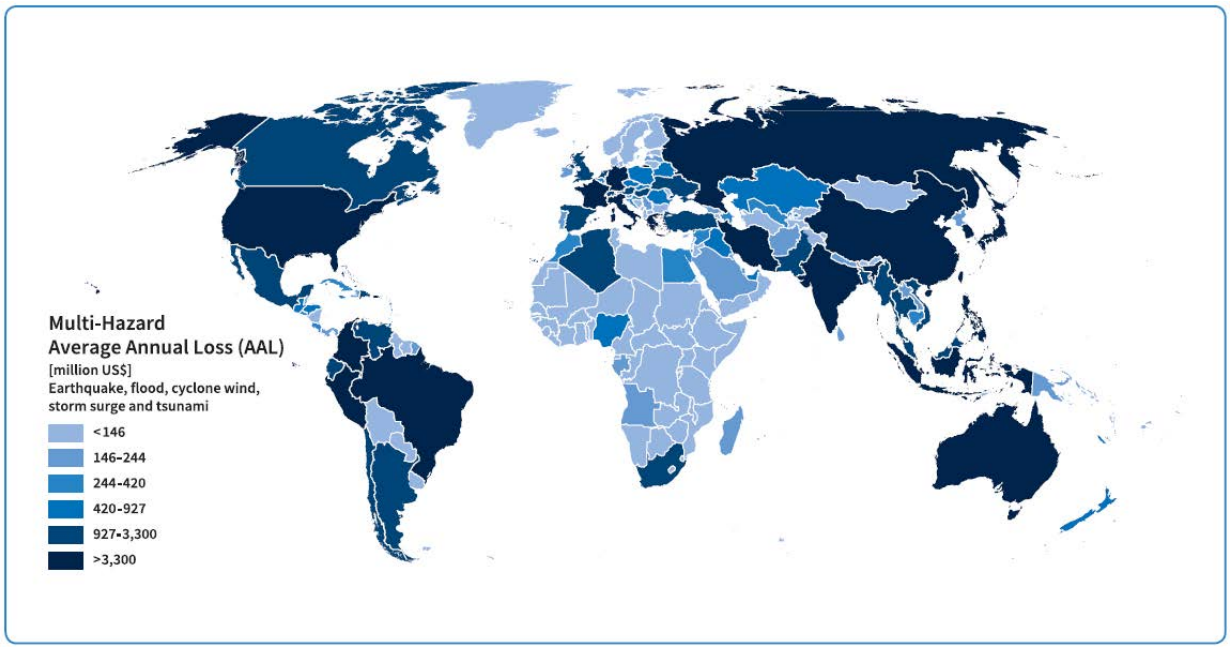
Community stakeholders, both individually and collectively within the U.S., are not alone as they consider how best to reduce the mounting toll of floods and other hazard events. The effects of disasters are felt internationally and the economic and human tolls continue to rise.

Worldwide Disaster Risk

According to the United Nation's 2015 Global Assessment Report on Disaster Risk Reduction (GAR)[1], "Economic losses from disasters such as earthquakes, tsunamis, cyclones and flooding are now reaching an average of US $250 billion to US $300 billion each year. Future losses (expected annual losses) are now estimated at US $314 billion in the built environment alone."

The report continues: "Global models suggest the risk of economic losses is rising as a result of the rapidly increasing value of the assets that are exposed to major hazards. In addition, a large proportion of losses continue to be associated with small and recurring disaster events that severely damage critical public infrastructure, human lives, animal and wildlife, agriculture, housing and production."

Figure 1.1 Global Multi-Hazard Average Annual Loss (AAL)



(Source: UNISDR with data from Global Risk Assessment)

U.S. Disaster Risk

Research by Dr. Arthur "Chris" Nelson, FAICP, Professor of Urban Planning and Real Estate Development at the University of Arizona, indicates more than half of the built environment that will be seen in the U.S. in 2025 was not in existence in 2000.

Overall U.S. population growth for the 15 year, 2000-2015 period was 40 million people. 79.5 percent (%) of the growth occurred in the coastal states and 29% in shore-adjacent counties, putting more of the population at increased risk from extreme coastal storms and other flooding events. (National Ocean Economics Program[2])

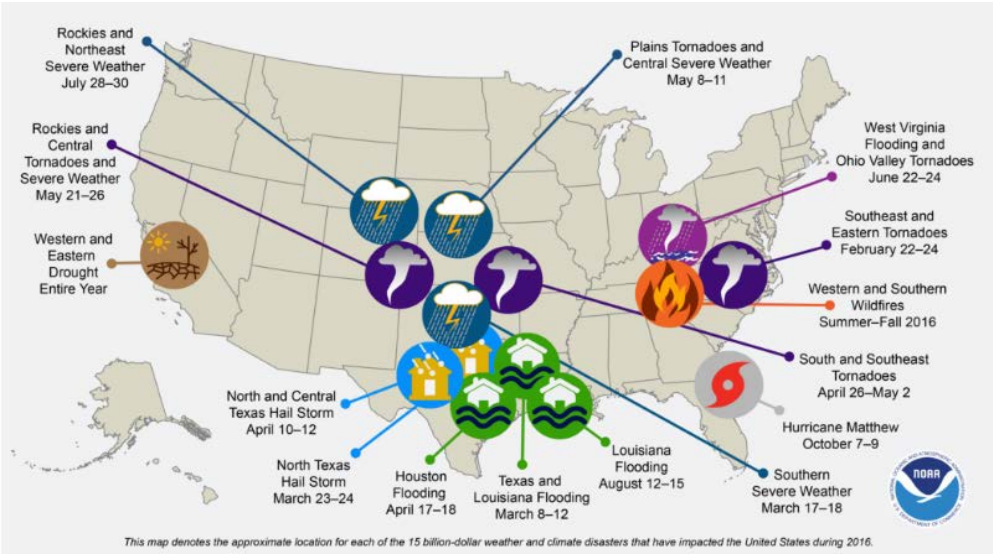
The consensus among researchers in the field is that the U.S. can expect significant increases in disasters in the coming years due to current land use practices, irrespective of any additional toll which will be caused by climate change, land subsidence, and sea level rise.

Million and Billion Dollar Disasters: Breaking the (U.S.) Bank

According to a 2017 National Oceanic and Atmospheric Administration (NOAA) report, "Since 1980, the U.S. has sustained 203 weather and climate disasters where the overall damage costs reached or exceeded $1 billion (including adjustments based on the Consumer Price Index, as of January 2017). The cumulative costs for these 203 events exceed $1.1 trillion." (*2016: A Historic Year for Billion-Dollar Weather and Climate Disasters in U.S.*[3])

In 2016, there were 15 weather and climate events with losses exceeding one billion dollars each across the U.S. These events included drought, wildfire, four inland flood events, eight severe storm events, and a tropical cyclone event. Cumulatively, these led to 138 fatalities and caused 46.0 billion dollars in total, direct costs. The 2016 total was the second highest annual number of U.S. billion-dollar disasters.

Figure 1.2 U.S. 2016 Billion-Dollar Weather and Climate Disasters



(Source: Map by NOAA NCEI, adapted by Climate.gov)

Smaller scale natural disaster events, events occurring in areas not usually affected, events in which the jurisdictions do not have adequate response resources, or events which receive less ongoing publicity, are all equally devastating to those involved. There is no comprehensive database of the 99% of emergency and smaller disaster events which do not involve Federal disaster relief, but which cost the states, counties, cities, and towns an increasing loss of opportunities to do better things. The local chances for spending on something that advances community goals go down with every dollar diverted to response and recovery. As small events continue to increase and there is increasing exposure of property and lives, mitigation becomes more and more imperative and cost-effective.

Residents of hazardous areas know too well the high costs and emotional trauma associated with rebuilding, only to then face another devastating flood or other disaster.

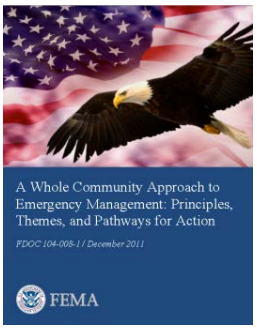
People are generous in times of disaster, providing support and donations to those affected by these events. However, individuals, residents, business owners, community leaders, and taxpayers are increasingly frustrated with the hardships and costs associated with repeatedly rebuilding structures in areas that suffer natural disasters, especially flooding, the most frequent disaster event in the U.S.

Addressing Disaster Risk as a Whole Community

Both before and after a disaster takes place, individuals look to their community leaders and organizations for help in addressing the disaster's consequences.

- Resilience refers to the community's ability to adapt to changing conditions and withstand and rapidly recover from disruptions due to emergencies.
- Communities need to look together for solutions to ensure that people adapt to local natural hazards and move forward together to achieve disaster resilience.
- While state and federal resources will continue to be a part of helping disaster survivors, community actions are at the core of community resilience.

Nationwide, many communities are adopting strategies for disaster resilience, having determined it makes sense to build, and rebuild, safely and wisely.



FEMA's *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action*[4], describes a national effort to meet with stakeholders and develop a strategy for disaster resilience nation-wide.

As community members look for solutions that ensure adaptation to natural processes, they can exemplify the Native American concept of Nania[5], or "all together." This powerful concept can be applied to the collective development of creative common sense strategies to help individuals and communities cope with the consequences of disasters.

Accomplishing this objective is not simple; no single agency or program exists that effectively addresses all the diverse needs in areas impacted by repeated floods and other natural disasters. Using partnerships to promote

mitigation, preparedness, response and sustainability, creative strategies can be crafted for individuals and communities and, thus, turn vision into reality. It is critical that communities look beyond just the FEMA programs and utilize broader, more holistic, strategies.

The NHMA believes that communities in the U.S. should take the lead in following the "No Adverse Impact" (NAI) solution to increased flood damage advocated by the ASFPM. These NAI principles may be expanded to reduce all forms of human-induced disaster damage caused by ignoring natural hazards:

- Every effort should be made to stop disaster damage before it occurs.
- Damage caused by human occupancy of hazardous areas must be reduced or eliminated.
- Disaster relief and recovery processes should be designed and engineered to be fair, efficient and sustainable, based on the foundation of recognition of natural disasters and mitigation.

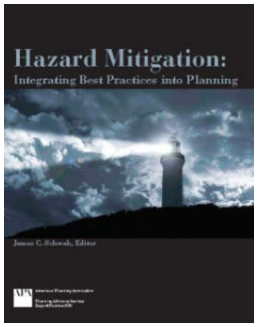
The Three Legs of Disaster Risk Reduction

There are three major areas in which implementation of community measures could significantly reduce the growing toll of damage from disasters in our nation:

Undeveloped Property that is Being Developed for the First Time or Land that is Being Completely Redeveloped

This scenario provides the best opportunity to develop safely and properly with costs being placed on the appropriate party; the developer or property owner.

The American Planning Association, in Hazard Mitigation: Integrating Best Practices into Planning[6], summarizes the advantages of this circumstance in achieving a disaster resilient future:



- Zoning, building codes, and land use regulations can be used to keep future development out of known hazard areas.
- Communities can influence the location of public and private investment, guiding it away from known hazard areas and toward safe growth locations.
- Zoning and subdivision regulations can direct private development away from hazard areas through designation of location-specific allowable land uses and standards for public safety.
- Capital improvement programs (CIPs) can direct funding for public facilities such as roads, bridges, utility systems, and critical facilities to locations outside hazard areas.

Undeveloped Lands or Existing Developed Lands that Face Repeated Risks from Disasters

Mitigating community risk includes designating these lands for uses that can withstand major damage from foreseeable hazards as well as:

- Updating the hazard mitigation plan's risk assessment in order to provide community/stakeholders a better understanding of risk from multiple hazards
- Addressing development issues and the need to review and revise existing zoning, building codes, and land use regulations to assess and minimize risk
- Providing special attention to underserved and marginalized populations
- Passing stricter zoning regulations which trigger higher, safer, building standards when land use changes (e.g., from business and industry to residential)
- Adding cumulative substantial damage provisions to local regulatory standards (owners are required to meet current building standards when accumulated damage to a structure totals 50 percent or greater from one or more hazard events)

Development or Redevelopment of Hazard Risk Areas

Many jurisdictions in the U.S. are confronted with developed areas located within natural hazard zones.

Community requirements can restrict future development and/or redevelopment within these areas, enabling the community to evaluate their readiness for facing future disasters, and take actions such as:

- Enacting community wildfire protection codes and ordinances
- Promoting safe room construction
- Updating techniques for ensuring safety in developed areas subject to earthquake, landslide, wildfire, and flood hazards
- Incorporating mitigation into local comprehensive and emergency operations plans and day-to-day government operations evacuation plans, warning systems, and into local emergency plans

It CAN Be Done

The devastation may have taken many forms, and the recovery may take months or even years. However, by working together, balancing long- and short-term objectives the whole community which includes community leaders, residents, business owners, and various private and volunteer agencies can work together to develop a common vision for their community and weave together a variety of different funding sources, technical support, lessons from other communities, and through synergy, create better tomorrows for their community.

Natural events, such as floods and landslides, are only disasters when they impact human populations and development. The challenge in creating resilient communities is to reduce the chance of *natural events* becoming *natural disasters*.

The Disaster Risk Reduction (DRR) Ambassador Curriculum

The DRR Ambassador Curriculum is the "flagship" initiative of NHMA, developed under an FY 2015 Cooperative Agreement with the Federal Emergency Management Agency.

The DRR Ambassador Curriculum supports the primary goal of reducing disaster risks by providing a "path forward" to community members and stakeholders in understanding and preparing for the implementation of programs and measures which address the entire disaster cycle (pre, during, and post disaster).

The unique focus of the DRR Ambassador Curriculum is to support community leaders from the private and public sector to engage and lead community-level DRR dialogue by providing multidisciplinary educational resources, self-study curricula, and training workshops.

The DRR Ambassador Curriculum currently consists of a series of stand-alone modules approximately 1-2 hours in duration that may be completed consecutively or as needed. The "Curriculum At-A-Glance" may be found at the end of this Chapter. Individuals who successfully complete the entire curriculum will receive the Disaster Risk Reduction Ambassador Certificate.

DRR Ambassadors come from the ranks of elected officials, disaster organizations, public health and safety personnel, business academic and community leaders; and ordinary citizens who have an interest. Ambassadors will learn to collaborate with other officials, the media, the private sector, non-profit entities, and other citizens willing to think seriously about protecting their community and work proactively to reduce risks from natural hazards. DRR Ambassadors will help their communities identify, assess, and address natural hazards that could produce catastrophic damage in the future.

DRR Ambassadors can provide strong leadership to develop and implement a comprehensive plan that will integrate mitigation activities for future generations. To change the existing cycle of reacting to foreseeable hazardous events, local communities will need bold decision-making and sound mitigation planning that allows for and incorporates natural processes in such a way as to avoid damage. This paradigm modification requires an understanding that reliance on existing federal and state mitigation practices are often not enough to ensure a community's safety. Most existing federal standards should be viewed as minimum mitigation measures and should be evaluated to determine the benefits they provide locally.

Building Your Roadmap to a Disaster Resilient Future

The purpose of *Building Your Roadmap to a Disaster Resilient Future* is to provide an easy to use and easy to understand reference for mapping a route toward disaster resilience.

The target audience is DRR Ambassadors – the community residents, emergency management personnel, local planning and zoning staff, elected officials, and other private, public, academic, and business stakeholders who are interested in and willing to become involved in advancing disaster resilience in communities.

The imagery of the roadmap is meant to convey that communities get on the road to disaster risk reduction and community resilience from wherever they are, map out their trip toward the destination they envision, and take the route that works for them. That trip can be complex, adventurous, and frustrating. There are starts, stops, detours, and periodic gridlock as communities wend their way through countless programs, requirements, and resources. The *Roadmap* will provide its users with ideas for routes to follow community disaster risk reduction along with explanations and hyperlinks to a wide array of technical and other resources needed at various junctures. Each chapter includes a related example of a community's progress to that mile post.

Following Chapter 1**,** Why Start this Journey? An Invitation to Travel the Road to Disaster Resilience, *Building Your Roadmap to a Disaster Resilient Future* continues with:

Forming Your Community's Vision for Disaster Resilience

- Describes a place to start developing a vision of disaster resilience
- Identifies the stakeholder groups whose insights are vital to the process, and opportunities to engage them
- Discusses asset-based risk assessment as the best way to start a conversation about the disaster resilient destination

Planning the Route to Your Disaster Resilient Destination

- Discusses and provides resources for the hazard mitigation planning process, as the starting point, the guide for future decisions, and to ensure eligibility for federal programs
- Focuses on the hazard mitigation strategy and technical resources for selecting feasible cost effective mitigation actions

Finding Pre-Disaster Resources to get to Your Disaster Resilient Destination

- Focuses on how communities can advance their hazard mitigation strategy in the pre-disaster environment
- Emphasizes the importance of building codes
- Explains major pre-disaster resources for disaster resilience and provides a compendium

Recovering and Getting Back on the Road to Disaster Resilience

- Provides background on the Presidential Disaster Declaration (PDD) process
- Describes major post-disaster resources for risk reduction and provides a compendium
- Explains community National Flood Insurance Program (NFIP) responsibility following flooding and provides resources
- Describes opportunities for obtaining technical assistance to ensure quality grant applications and meet other requirements
- Summarizes the essentials of how community leaders and others should deal with disaster situations through the "10 P's" of Post-Disaster Safe Recovery

Successful Stories from Travelers Who Made the Journey

- Includes stories about journeys of Disaster Risk Reduction Ambassadors and their communities that reduced disaster risk and continue to enhance resiliency
- Includes additional synopses of other journeys taken by communities that chose widely diverse roadmaps toward disaster resilience

Legal Aspects of Disaster Planning

(From *A Living Mosaic: A Path Forward* published by the NHMA in 2015)

This document synthesizes the complex issues arising out of a landmark decision (*Koontz v. St. Johns River Water Management District*, 568 U.S., 2013) by the US Supreme Court, and discusses legal issues surrounding mandatory flood insurance, mutual aid (in its different forms) and legal liability in disaster preparedness

Local and State Officials Coping with Disasters

(A paper presented by JoAnn Howard JD, to the American Bar Association on August 8, 2013)

This paper gives planners, floodplain managers, attorneys, and others representing local governments and businesses an overview of post-disaster topics including Pre-Disaster Preparation for Local Jurisdictions and Insurance Aspects of Reconstruction. It provides clarity to community planning and local building officials.

DRR Ambassador Curriculum At-A-Glance

I. Disaster Risk Reduction for a Safe and Prosperous Future	
1	Introduction to the Natural Hazard Mitigation Association and Disaster Risk Reduction Ambassador Curriculum
2	Introduction to Disaster Risk Reduction as a Foundation of Community Resilience
3	Leadership for Disaster Risk Reduction
4	Community Disaster Risk Reduction and Adaptation
5	Approaching the Challenge of Disaster Risk Reduction: NIST Community Resilience Guide
II. Forming a Community's Vision for Disaster Risk Reduction	
6	Risk Assessment through Storytelling: An Asset-Based Approach
7	Achieving Community Buy-in for Disaster Risk Reduction: Win-Win Approaches
8	Leveraging Resources to Improve Disaster Risk Reduction
III. Realizable, Practical, and Affordable Approaches for Moving from a Vision for Disaster Risk Reduction to a Strategy	
9	Selecting and Implementing a Strategy for Addressing Community Disaster Risk Problems
10	Integrating Hazard Mitigation into Local Planning
11	Beyond Codes and Low-Impact Development
12	Creating the Plan: A Sustainable Floodplain Management Process Model
IV. Resources and Tools for Implementing a Community's Disaster Risk Reduction Strategy	
13	Climate and Weather Tools and Trends
14	Risk Assessment Basics
15	Legal and Policy Opportunities for Disaster Risk Reduction
16	Linking Catastrophe Insurance to Disaster Risk Reduction
V. Resources for Hazard-Specific Disaster Risk Reduction	
17	Living with Water: Inland and Coastal Flooding
18	Design for Flood Resilience: Part I: Floodplain Management and Flood Resistant Design
19	Design for Flood Resilience: Part II: Green Infrastructure / Low Impact Development
20	Overcoming Impediments to Flood Resilience: Paths Forward
21	Wildfire Mitigation
22	The Wildfire-Flood Connection
23	Severe Thunderstorm/ Tornado Safe Rooms
24	From Policy to Engineering: Earthquake Risks

Chapter 1 References

1. United Nation's 2015 Global Assessment Report on Disaster Risk Reduction (GAR): http://www.preventionweb.net/english/hyogo/gar/2015/en/gar-pdf/GAR2015_EN.pdf
2. National Ocean Economics Program: http://www.oceaneconomics.org/Demographics/
3. *2016: A Historic Year for Billion-Dollar Weather and Climate Disasters in U.S.*: https://www.climate.gov/news-features/blogs/beyond-data/2016-historic-year-billion-dollar-weather-and-climate-disasters-us
4. FEMA, *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action* (https://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf)
5. *Nania* was the name of the 1994 Association of State Floodplain Managers (ASFPM) annual conference, held in Tulsa, Oklahoma
6. Hazard Mitigation: Integrating Best Practices into Planning: https://www.fema.gov/media-library-data/20130726-1739-25045-4373/pas_560_final.pdf
7. Hazard Mitigation in Disaster Recovery, by Edward A. Thomas, Esq., and Lincoln Walther, FAICP, in *Planning for Post Disaster Briefing Papers*, American Planning Association, 2015. Located at: https://www.planning.org/research/postdisaster/briefingpapers/hazardmitigation.htm

Where Are We Going?

Forming Your Community's Vision for Disaster Resilience

No two communities have the same influences affecting their decisions about their disaster resilient future – variables include hazards, demographics, economics, social systems, geography, government structures, development practices, experiences with disasters, building stock, local leadership, existing community plans… the list goes on and on. No two communities begin the journey toward disaster resilience from the same place.

- In a community that has not experienced a hazard event in many years, residents and leadership may be happy with the assets, amenities, and way of life in their community and don't want to dwell on the "what ifs."
- Another community may have been affected at some point by one or more natural hazard events and has begun the journey slowly – perhaps requiring new construction to be only one foot above the base flood elevation.
- Still another community, following a hazard event that causes severe damage, lacking a plan and/or leadership, may only focus on "getting back to normal."
- In yet another scenario, the community takes advantage of opportunities available after a disaster to recreate the community to become a better place, as Greensburg, Kansas did after the tornado in 2007.[1]

Regardless of where the trip toward disaster resilience starts or resumes, and what the differences are between communities, communities who seek rebuilding dollars all engage in FEMA's Hazard Mitigation Planning process which includes the following phases:

- Organize resources
- Assess risk
- Prepare the plan
- Implement and monitor the plan

> ***Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.***

This chapter is focused on the first two phases, which help define the disaster resilience destination in a way that satisfies, or at least addresses, the interests of the whole community.

Organize Resources

The intention of hazard mitigation planning is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses on multiple hazard types.

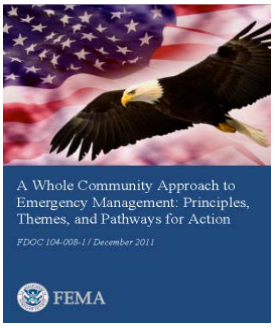
The topics covered here are presented within the context of the beginning phase of the mitigation planning process, although many of these activities will continue more or less behind the scenes throughout the process. Therefore, the efforts you put into identifying

and organizing your resources early on will pay dividends later as you progress through some of the more challenging tasks of mitigation planning.

This is accomplished by using a systematic process of learning about the hazards that can affect your community or state, setting clear goals, identifying appropriate actions, following through with an effective mitigation strategy, and keeping the plan current.

Identify Stakeholders for Disaster Resilience

The importance of community-level involvement is a theme echoed by almost every disaster resilience proponent, from the United Nations to federal government agencies, to states, tribes, localities, and professional organizations. "Disasters affect people and people live in communities. People have gained experience in dealing with disasters because they have had to, and the knowledge and expertise they have acquired is invaluable to effective disaster risk reduction. This local knowledge… is a welcome supplement to scientific knowledge. Decisions about disaster risk reduction are best made based on this local knowledge, combined with the scientific knowledge and technologies available to ensure that investments in disaster resilience will be effective." (Post-2015 Framework for Disaster Risk Reduction (HFA2)[2], United Nations Office for Disaster Risk Reduction)



Stakeholders are people or organizations who may be affected by a policy or action. Stakeholders for disaster resilience can be summarized using the whole community model described in FEMA's *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action*[3].

Stakeholders in the Community

Individuals and Families

Individuals and families, including those with access and functional needs, have a stake in the resilience decisions and policies developed and implemented in their communities.

Individuals may affect local disaster outcomes and policies by:

- Living in vulnerable locations
- Choosing whether to take pre-disaster mitigation measures to limit their vulnerability
- Understanding existing risks
- Providing insights on access and functional needs
- Voting for or against new ordinances

The Business Community

The business community plays an important role in deciding the route to disaster resilience.

Some businesses have capability to conduct and/or fund technical assistance to assess risks and/or develop risk reduction strategies; often focused primarily on planning for response and recovery, rather than on increasing regulation to reduce hazard risks.

Both local businesses and branches of national concerns can be sources of immediate help after disaster, addressing basic community needs.

Interest in proactive planning to reduce disaster risk increases as business owners/leaders understand the results of damaged or failed infrastructures after disasters, and resulting business interruption even if individual facilities have not been damaged.

Businesses may make decisions about expanding investment in a community, based on the community's efforts to address and reduce risks to which a community is vulnerable.

> Walmart and the Walmart Foundation contribute cash grants as well as food, water, products, and associate expertise to assist with disasters. The two main initiatives in their disaster preparedness program are to improve the speed and focus of disaster response and strengthen disaster preparedness. [4]

Media Outlets

Media outlets can be a huge asset in garnering support for disaster resilience initiatives.

Other involvement may include:

- Announcing meetings and invitations to join in the community's disaster resilience efforts
- Becoming part of the plan to disseminate preparedness, response, recovery, and mitigation information when an emergency or disaster is anticipated or has occurred

Faith-Based and Community Organizations and Non-Profit Groups

Faith-based and community organizations and non-profit groups vary in size, resources, and by focus or expertise.

Whether local or affiliated with national organizations, these groups should be included in long-term resilience planning. When key roles are defined, benefits to the community include:

- Additional resources to address local needs during recovery, and less duplication of services
- Specialized knowledge, e.g., understanding the needs of underserved or special needs populations
- Mitigation opportunities in their rebuilding initiatives

Professional Organizations

Professional organizations and their members may provide a source of credentialed experts on a variety of subjects such as:

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- Climate change
- Hazard mitigation planning
- Floodplain management
- Architecture and engineering
- Environmental requirements
- Emergency management

Schools and Academia

Schools and academia provide scientific and other technical knowledge needed to make sound risk reduction decisions.

While not every community includes an academic institution; these institutions are able to access the technical information, tools, and, potentially, funding for specific projects through research centers throughout the country. Schools and academic institutions also provide potential shelter options, Campus-Community Emergency Response Team (C-CERT) supplemental volunteers, and transportation resources.

Local Government

Local government roles vary depending on community size, type of government structure, and resources. A community's disaster-resilience effort is often led by a local government official such as the emergency program manager, hazard mitigation planner, community resilience planner, floodplain manager, or an elected official; but the support of the rest of local government also is critical.

Depending on the risk reduction strategies a community pursues, participation from all of these entities may be critical:

LOCAL GOVERNMENT STAKEHOLDERS

- Governing body
- Departments coordinating emergency management services
- Fire and police departments, which may also be responsible for other emergency management functions
- Public works departments or engineering departments
- Transportation departments
- Land use planning and community development departments
- Public health departments and housing departments
- Parks and recreation departments

Regional, Tribal, State, and Federal Agencies

Regional, tribal, state, and federal agencies often work in concert as state emergency management agencies connect local governments to FEMA and other federal agencies for services.

State agencies work with legislatures to pass laws that allow local entities to enforce zoning and land use regulations, and incorporate local plans and priorities into state mitigation planning.

FEMA, under the Department of Homeland Security, is the primary agency involved in federal emergency management and provides vital technical assistance, planning capability, and funding to communities. Many other agencies also have roles in advancing resilience. The federal government is very interested in reducing disaster risk, which is easy to understand given the rising cost of disasters.

What's New? Federal Support for Disaster Resilience

Later chapters will comprehensively describe the resources federal agencies may be able to contribute to communities' efforts toward resilience. Some federal agencies have recently increased their support for resilience efforts and are finding some funds to help communities in their local collaborative efforts. The table below describes some examples of new federal agency support.

Federal agency support for resilience efforts will be discussed in Chapters 4 and 5.

Table 2.1 Federal Support for Disaster Resilience

Program	Support
Hazard Mitigation Grant Program 5% Initiative (US Federal Emergency Management Agency) For more information: https://www.fema.gov/media-library-data/1471961428254-698793a6376496d84044426321f010ac/FactSheet_Clarifying-Building-Code-Elements_081716.pdf	• Previously funds were available to communities to enhance disaster resilience related to building codes where unique hazards were posed by tornadoes and high winds • Program has been expanded to all hazards
National Disaster Resilience Competition (US Department of Housing and Urban Development) For more information: https://www.hudexchange.info/programs/cdbg-dr/resilient-recovery/	• Allocates Community Development Block Grant National Resilient Disaster Recovery (CDBG-NDR) grant funds on a competitive basis
Regional Resiliency Assessment Program (US Department of Homeland Security) For more information: https://www.dhs.gov/regional-resiliency-assessment-program	• Provides a cooperative assessment of specific critical infrastructure within a designated geographic area • Addresses a range of infrastructure resilience issues that could have regionally and nationally significant consequences
NOAA 2017 Coastal Resilience Grants (National Oceanographic and Atmospheric Agency) For more information: https://www.coast.noaa.gov/resilience-grant/	• Integrates two existing grant programs: The Coastal Ecosystem Resiliency Grants Program administered by NOAA Fisheries, and the Regional Coastal Resilience Grants Program • Funds projects that build resilience, including activities that protect life and property, safeguard people and infrastructure, strengthen the economy, or conserve and restore coastal and marine resources

Other Groups Interested in Disaster Resilience

Today there are well over 100 organizations and groups involved in what they describe as resilience. Don Watson, EarthRise design, has developed The "OARS LIST" of Organizations Addressing Resilience and Sustainability.[5]

There may be members or chapters of these organizations which communities may be interested in joining with other DRR Ambassadors in the community.

Assess Risk

Communities conduct risk assessments to determine the potential impacts of hazards to the people, economy, and built and natural environments of the community. The risk assessment provides the foundation for the rest of the mitigation planning process, which is focused on identifying and prioritizing actions to reduce risk to hazards. The risk assessment also can be used to establish emergency preparedness and response priorities, for land use and comprehensive planning, and for decision making by elected officials, city and county departments, businesses, and organizations in the community. Many approaches to developing a risk assessment are possible, depending on available data, technology, and resources. Risk assessments do not require sophisticated technology but do need to be accurate, current, and relevant. Some communities may choose to address a broader range of threats and hazards, or to tie their hazard identification and risk assessment to other planning initiatives.

KEY TERMS

Risk, for the purpose of hazard mitigation planning, is the potential for damage, loss, or other impacts created by the interaction of natural hazards with community assets.

Hazards are natural processes, such as tornados and earthquakes. The exposure of people, property, and other community assets to natural hazards can result in disasters depending on the impacts.

Impacts are the consequences or effects of the hazard on the community and its assets. The type and severity of impacts are based on the extent of the hazard and the vulnerability of the asset, as well as the community's capabilities to mitigate, prepare for, respond to, and recover from events.

FEMA recommends the following four steps for conducting a risk assessment:

1. **Describe Hazards**: location, extent, previous occurrences, probability of future events
2. **Identify Community Assets**: people, economy, built environment, natural environment
3. **Analyze Risk**: evaluation of vulnerable assets, description of potential impacts and loss estimates for each hazard considerations for risk based on changes in development over time
4. **Summarize Vulnerability**: characteristics of community assets that make them susceptible to damage from a given hazard

One way to engage stakeholders is to demonstrate the effects of hazard risks on their interests. Risk assessments are conducted by communities and tribes, or by a higher level of government that includes them (such as the county) to meet needs and requirements of a variety of emergency management programs and grants. This information can be obtained by

DRR Ambassadors from the planning or emergency management office. There is, however, more than one way to conduct a risk assessment and it is worthwhile to consider alternative approaches or enhancing the existing assessment.

There is a need to connect the potential event to what people are doing or can do to reduce the risk.

Considering potential impacts on children and all local people, water quality, habitat, sustainable systems, quality of life and lost quality of place may be more effective in building support for disaster resilience efforts than considering risks in terms of potential damage to structures and infrastructure. To broaden this scope, community leaders can emphasize tangible goals and incentives, fiduciary responsibilities, and public safety; but at the same time attempt to ascertain how these are synergistically aligned with broader community interests. It is difficult to engage a community in a comprehensive risk-reduction conversation without taking these underlying factors into account.

A useful risk assessment considers the whole community, reaching across social, economic, built, and natural environments. When the climate adaptation community has focused on efforts to address the disproportionately negative impacts climate change has on the most vulnerable citizens, one lesson they learned is that, "Identifying vulnerable populations isn't easy," but critical to understanding the causes of their vulnerability. See the full article *Vulnerable Citizens: Lessons in Building Equitable Resilience* at the end of this chapter.

Risk is often seen as something external or abstract (the river is causing a flood, the tornado outside can happen anywhere so we can't do anything about it); and not as a result of human decisions (developing close to the water) or human failure to take actions (not heeding warnings or not building safe rooms/shelters).

Remember that citizens care about a very wide range of issues, and are also dealing with stressors ranging from poverty to chronic environmental degradation and accompanying health risks. There is a need to connect the potential event to what people are doing or can do to reduce the risk. This connection can be made by:

- **Explaining how the risk relates to daily lives** – how it will affect their home, child's school, or work. For example, will a disaster/hazard event cause an economic disruption that would damage the community and in the long term, drive down the value of homes or cause employers to leave town?
- **Helping people visualize the risk** – show how high flood waters could reach on a recognizable landmark or building

Asset-Based Risk Assessment

An asset-based risk assessment process is intended to focus on what really matters to a community by identifying:

- Assets beyond just built capital, by including natural and social capital; and
- Opportunities for mitigation, risk reduction, and resilience

A truly comprehensive risk assessment process can provide information about risk to help governments, businesses, and communities make better risk management decisions. In order for community stakeholders to analyze risk, they must identify and consider what they value. Typically, when conducting risk assessment, the mapping of what is considered valuable and important to the broader community is not explicitly stated and debated among the majority of stakeholders. The most vulnerable are often left out of the discussion. Instead there is an often unfounded assumption that all stakeholders implicitly agree on community assets, including infrastructure that are both necessary and vulnerable. For example, what is more important to a town: fixing the town common or rebuilding a neighborhood playground?

"We need stronger neighborhoods, increased walkability, greater sense of place, mixed land uses, closer neighbor and family ties and trust,"[6] read a set of conclusions drawn from tabletop exercises held in the cities of Redmond, Everett, and Neah Bay, Washington. These outcomes might have been expected if the exercise had been focused on smart growth, but stakeholders were addressing earthquake risk.

True, individuals mentioned traditional earthquake mitigation measures such as retrofitting or strengthening structures, developing redundant energy sources, and improving emergency response, but those did not drive the discussions.

Instead, this new approach to measuring risk began with an inventory of community assets – built, natural, and social "capital" – instead of vulnerabilities, and it prompted stakeholders familiar with emergency preparedness to broaden their thinking about how to plan for disasters. [6, 7]

Threat and Hazard Identification and Risk Assessment (THIRA)

Risk assessment is also a field of practice that applies to other planning efforts. FEMA's long-established Threat and Hazard Identification and Risk Assessment (THIRA)[8] is a 4-step risk assessment process that can help a whole community – individuals, businesses, faith-based organizations, nonprofit groups, schools and academia, and all levels of government – understand its risks and estimate capability requirements. Mitigation should be referenced in the THIRA. The THIRA brings all relevant groups together to assess all threats to the safety of the community, or region, or state.

Ultimately, the THIRA process helps communities answer the following questions:

- What do we need to prepare for?
- What shareable resources are required in order to be prepared?
- What actions could be employed to avoid, divert, lessen, or eliminate a threat or hazard? For example, search and rescue leaders need to understand that mitigation can be a factor in the safety of their teams.

All of these approaches to risk assessment provide opportunities to remind citizens and officials of the co-benefits achieved in the community by taking actions such as safe and proper development to reduce identified risk.

Table 2.2 Community Risk Assessment Examples

Resource	Hazards/Sector
FEMA Business Impact Analysis (BIA) For more information: https://www.ready.gov/business-impact-analysis	Multi- Hazard/Business
FEMA Hazard Identification and Risk Assessment Tools For more information: https://www.fema.gov/hazard-identification-and-risk-assessment	Multi-Hazard/Business
FEMA Hazards U.S. Multi-Hazard (Hazus) For more information: http://msc.fema.gov/portal/resources/hazus	Multi-Hazard/Community
FEMA Local Mitigation Planning Handbook For more information: https://www.fema.gov/media-library/assets/documents/31598	Multi-Hazard/Community
FEMA Ready Business Risk Assessment Tool For more information: https://www.fema.gov/media-library/assets/documents/89542	Multi-Hazard/Business
FEMA Threat and Hazard Identification and Risk Assessment For more information: https://www.fema.gov/threat-and-hazard-identification-and-risk-assessment	Multi-Hazard/Community
U.S. Department of Health and Human Services (HHS) Hazard Vulnerability Analysis (HVA) *For healthcare facilities and the surrounding community; multiple tools and resources to help healthcare organizations and public health departments prioritize planning efforts* For more information: https://asprtracie.hhs.gov/technical-resources/3/Hazard-Vulnerability-Risk-Assessment/1	Multi-Hazard/Healthcare
NOAA Coastal Flood Exposure Mapper For more information: https://coast.noaa.gov/digitalcoast/tools/flood-exposure.html	Coastal flooding/ Community
Oregon State University Risk Assessment Tool *For university decision making based on current risk information* For more information: http://risk.oregonstate.edu/risk-assessment-tool	Multi-Hazard/ Academia
US Forest Service Wildfire Fire Assessment For more information: http://m.wfas.net/	Wildfire/Community

Communicate the Risk and Potential Benefits

This task is a blend of public relations and marketing. Not only must the facts – the risk, the options for mitigation, the potential rewards – be clearly laid out for the community, county or region, but considerable effort must be made to reach interests in the community that may not normally engage in public policy questions. While facts should be explained clearly and truthfully, at the same time they should be used to advocate for a course of action which may involve changes that could seriously impact citizens through higher taxes, inconvenience, or even major disruption of their daily lives.

The language of risk assessment can be difficult. The "100-year flood," hydrographic topology, swift water dynamic environments – these concepts all may be necessary to discuss, but they often are baffling to laypersons. This can be alleviated by:

- Using common language and all means of portraying the options and consequences of inaction in clear, dramatic (but not exaggerated) terms
- Avoiding the impulse to emphasize expertise and to slide into governmental bureaucratese, such as mind-numbing acronyms and abbreviations

Using All Available Local Media

The obvious avenues for community communication are the local newspapers (daily and weekly), local radio, community cable, and any TV stations that reach the market.

DRR Ambassadors can be coached on the best approaches to these media outlets.

Outreach efforts need not be restricted to traditional media.

NON-TRADITIONAL OUTREACH EFFORTS

- Special purpose publications for special needs populations and languages common in the area
- Intergenerational and geographical communication; literacy levels
- Creating a weekly or monthly "newspaper," a "Better Times"
- Local, low-power radio stations that operate in many communities
- Cable channels that feed into the local cable network
- Amateur radio organizations
- The Internet via email, social media and even a "Disaster Mitigation blog"

Programs like "**Disaster Ready Austin**" provide a glimpse into what one community has undertaken. More information can be obtained at: https://austintexas.gov/disasterreadyaustin

As the Austin experience illustrates, there is no "one size fits all" template for getting the word out to a community about Hazard Mitigation planning, but the approach listed can reach most of a community. Also keep in mind that:

- The average person is overwhelmed by a blizzard of information – some of it important, some trivial, much inaccurate and some even malevolently motivated.
- There are segments of any community that need fast, accurate information but who are isolated by language, custom, or economic circumstances.

Engage Stakeholders by Addressing their Interests

Stakeholders are more likely to be interested in a disaster resilient future that protects or enhances assets they value.

One way to engage stakeholder groups is to find examples of how their specific interests became part of another community's disaster resilient future. Some examples are provided here.

When Historic Structures are at Risk

The Foundation of the American Institute for Conservation (FAIC)[9], Heritage Emergency National Task Force (cosponsored by the Smithsonian Institution and FEMA):

- Identifies needs and provides available technical expertise and resources for salvaging and protecting historic properties and cultural collections
- Helps libraries, archives, museums, historical societies, and historic sites protect their collections and buildings from natural disasters

"The Curtain Goes Up... and the Building Stays Up: Seismic Retrofit Protects Historic Theater"[10] is an example of pre-disaster mitigation action, designed to preserve the Dock Street Theatre in Charleston, South Carolina.

When Natural Beauty is at Risk

Communities committed to preserving viewscapes may want to access the New Hampshire Office of Energy and Planning, *Preservation of Scenic Areas and Viewsheds*[11], which describes a process for protecting and saving views.

When Wildland/Urban Interface Areas are at Risk

If development in a wildland urban interface area is a community concern, FEMA's *Wildland/Urban Interface Construction*[12] describes construction methods that increase community safety in interface areas.

To read about a community's successes in maintaining the wildland urban interface they can access, "A Bolder Boulder: County Races Ahead with Wildfire Mitigation."[13]

Engage Stakeholders in Envisioning the Disaster Resilient Destination

With the risk assessment completed, DRR Ambassadors can begin the process of engaging stakeholders in discussions about disaster resilience and what is involved in pursuing a disaster resilient future. There are many ways to approach this task.

Public Participation Skills Module Available

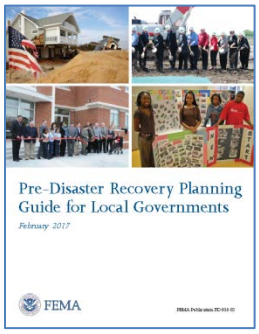
As part of the development of the book *"Public Participation for 21st Century Democracy,"* by Matt Leighninger and Tina Nabatchi, the authors created a Participation Skills Module to bring together the skills people can use to engage citizens in meaningful and productive ways. These include 10 key talents for engaging citizens:

KEY TALENTS FOR ENGAGING CITIZENS

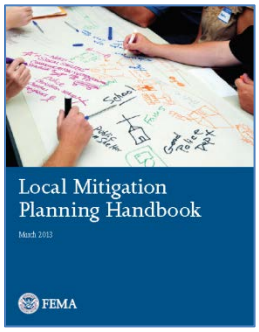
- Building coalitions and networks
- Recruiting participants
- Communicating about participation
- Managing conflict
- Providing information and options
- Managing discussions
- Helping participants generate ideas
- Helping participants make group decisions
- Supporting action efforts
- Evaluating participation, and
- Providing accessible meeting locations and informational distribution sites
- Building in follow-up dates and keeping the group engaged with an agreed upon sunset date

The module, which expands on these topics, is available for download at: bit.ly/PPskills. *(Please note: This is a Microsoft Word downloadable document. It contains excellent content; which we strongly recommend. One must copy and paste the URL into their browser but it is worth the effort.)*

There are many other sources that include community engagement processes. Some examples:



FEMA Pre-Disaster Recovery Planning Guide for Local Governments[14]



FEMA Local Mitigation Planning Handbook[15]

FEMA Risk MAP Community Engagement[16]

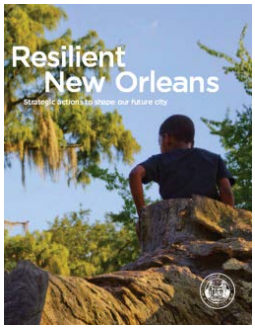
Summary

With the risk assessment and input from stakeholders, DRR Ambassadors will be able to present the situation, garner interest, and learn more about the interests and concerns of the whole community as they relate to disaster resilience. This will provide a vision of disaster resilience that can gain the support of the local governing body and help define the case for investing time, resources, and political capital in reducing risks and preparing for future disaster recovery.

Chapter 3 will address the next important element needed to define the community's roadmap to disaster resilience, the hazard mitigation plan.

Hazard mitigation plans will be discussed in Chapter 3.

Community Example: Deciding a Community's Disaster Resilient Destination



Resilient New Orleans – Strategic Actions to Shape our Future City[17] was awarded the 2016 National Planning Excellence Award: Best Practice, by the American Planning Association(APA).

The 2:45 minute long video included in this link provides an excellent synopsis of the vision and the visioning strategy used by the city to develop its plan.

The entire strategy can be downloaded at http://resilientnola.org/wp-content/uploads/2015/08/Resilient_New_Orleans_Strategy.pdf

As described by the American Planning Association, " 'Resilient New Orleans - Strategic Actions to Shape our Future City,' a 50-year vision for the city of New Orleans, is unique in that it addresses social equity in conjunction with environmental issues and disaster preparedness. The strategy represents three overarching fundamental challenges to the city's resilience – the environment is changing; equity is critical; and the future is uncertain."

New Orleans' planning process has included over 350 local, national, and international stakeholders.

During plan development, workshops with community representatives and advocates were held to address the needs of the city's most vulnerable communities. Representatives from neighborhoods throughout the city also met to discuss opportunities to incorporate building resilience in their communities. These actions helped ensure community participation and feedback throughout the process.

The planning group asked city residents to assess the plan's progress, to identify what was going well and what needed to improve, comparing the responses to the plan's drivers toward resiliency.

The outreach efforts resulted in an ongoing collaboration between public, private, nonprofit, academic and philanthropic sectors.

In naming Resilient New Orleans as recipient of the 2016 National Planning Excellence Award: Best Practice, the APA notes "The challenges that Resilient New Orleans explores are not necessarily surprising. However, the research and development process for the strategy explored the gaps in integration and where New Orleans has been lagging behind in action on environmental and social issues. What makes Resilient New Orleans different is the concept of seeing positive generational change with actions today. The effectiveness of this approach is rooted in a committed collaboration between partners across sectors and adaptation and change must be both physical and environmental."

Vulnerable Citizens: Lessons in Building Equitable Resilience[18]

The Model Forest Policy Program is a national nonprofit organization that builds the capacity of communities to be climate resilient by sustaining water resources, productive forests, citizens' wellbeing, and thriving economies. In that planning process, urban and rural communities with a shared dependence on ecosystem services can partner with one another, working to protect vulnerable citizens and natural resources while increasing resilience to climate change.

Recently, the climate adaptation community has focused on efforts to address the disproportionately negative impacts climate change has on the most vulnerable citizens. Here are some of the lessons learned so far:

Lesson 1: IDENTIFYING vulnerable populations isn't easy. Building resilience for those most impacted by climate change requires clearly identifying who is most vulnerable. Vulnerability assessments generally rely on measuring key indicators related to health, social and economic status, physical security, and disaster preparedness. Although these indicators are monitored and measured by government and social service organizations, the process of compiling and analyzing relevant data requires a great deal of time and effort.

As the Center for American Progress reports, "Government resources exist that can help create a map of socio-climate vulnerability. Unfortunately, the resources span agencies, and there is little evidence that they have been used collaboratively."

Lesson 2: INVEST in inclusion and authentic relationships. Communities must engage vulnerable citizens before effective planning can begin. Successful engagement goes far beyond communicating intentions and soliciting input from stakeholders. Those who are most vulnerable to climate impacts are often marginalized by traditional planning approaches. In order to effectively build resilience for vulnerable people, planners must invest in learning from and empowering vulnerable people:

- We must learn FROM (not just learn ABOUT) vulnerable people to understand the root causes of vulnerability and to recognize the social capital and assets within each community.
- We must NURTURE community and social capital.

In a recent Climate Solutions University webinar, Tanya Harris, community outreach coordinator with the Make It Right Foundation in New Orleans, emphasized that a focus on strengthening existing social networks was a key factor of success in efforts to rebuild the Lower 9th Ward after Hurricane Katrina.

Lesson 3: Address INEQUITY. Equitable resilience cannot be achieved without addressing the existing inequities that are becoming more intense in our society each day. Confronting these inequities requires a cross-sector, holistic approach to address the economic, environmental, and social factors that are the root causes of climate vulnerability.

Jacqui Patterson, Director of the NAACP's Environmental and Climate Justice Program, believes these factors include:

- Equity in decision-making and the allocation of resources
- Addressing disproportionate climate impacts
- Ensuring outcomes that measurably increase resilience for those most vulnerable

In summary, addressing climate and environmental vulnerabilities is just as much about building capacity in vulnerable communities as it is about preparing for anticipated future threats like natural disasters.

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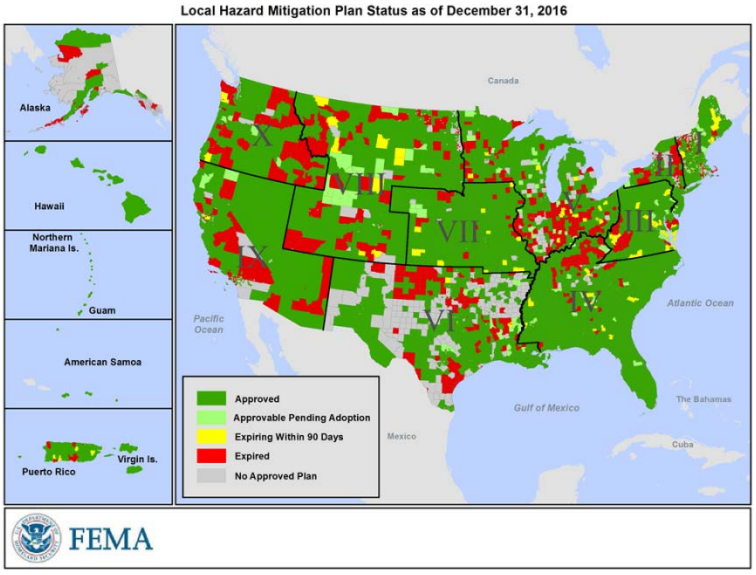
3 How Do We Get There?

Planning the Route to Your Disaster Resilient Destination

Once the DRR Ambassadors or their organization has decided to lead or participate in the journey toward disaster resilience for the community, and has learned about the community's related interests and concerns, there are likely to be many questions related to "What do I do now? How can I help my community move toward the destination?"

The answer to that is contained in the concept of a hazard mitigation plan. The mitigation planning process is designed to enable state, local, and tribal governments to identify policies, activities, and tools to implement hazard mitigation. This chapter will provide some background and a synopsis of hazard mitigation planning and then focus on the hazard mitigation strategy that describes the community's intended route toward disaster resilience.



Source: https://www.fema.gov/hazard-mitigation-plan-status

Hazard Mitigation Planning

DMA 2000

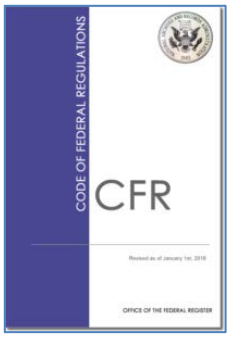
The Disaster Mitigation Act of 2000 added a highly needed emphasis on the responsibility of all levels of government to plan not only to recover from natural disasters but to reduce the future impacts and costs of those events. Many communities have already gone through FEMA's local hazard mitigation planning process at least once. As of December 31, 2016, a total of 22,300 local governments have current (FEMA-approved or approvable-pending-adoption) local mitigation plans and an additional 149 tribal governments have current tribal mitigation plans. That translates to over 81% of the nation's population living in communities with current mitigation plans. Other communities either have expired plans (plans must be updated every 5 years), or have never had approved plans.

Communities with approved hazard mitigation plans should have benefitted from an understanding of natural hazards, development of mitigation strategies, and eligibility for certain non-emergency FEMA grants. As communities consider a disaster resilient future, the hazard mitigation plan is their roadmap, and therefore essential. DRR Ambassadors need to be knowledgeable about the plan, if it exists, and to revisit it frequently. To be an effective roadmap, it must reflect current risks, the needs and interests of the stakeholders, current

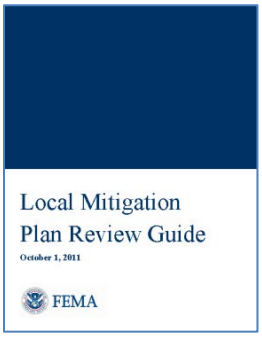
requirements, and the technologies available to formulate and implement risk reduction initiatives. The hazard mitigation plan is intended to ensure that development decisions do not make the existing risk and consequences of a foreseeable natural event even worse than they would be, based on the current situation. Without a plan to reduce a community's risk, when the inevitable disaster occurs, damages will likely be far greater than if the local government had taken steps in advance to reduce damage levels. The plan also allows for communities impacted by an active disaster to implement mitigation strategies and priorities pre-identified during the plan development, review and approval process.

A FEMA-approved hazard mitigation plan is required to apply for funding under Hazard Mitigation Assistance (HMA) Grant programs, which include the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM, and Flood Mitigation Assistance (FMA). See E.5.1 on page 45 in the HMA Guidance.[1]

It is also a nationally recognized standard. A jurisdiction that is drafting its first plan has scores of examples of approved plans throughout the country to learn from and use as a base, so there is no need to "reinvent the wheel." Communities that already have plans in place may also learn from each other in the process of completing the required five year updates.



Regulations for Local Hazard Mitigation Plans are found in the Code of Federal Regulations, 44 CFR 201.6.[2]



The Local Mitigation Plan Review Guide[3] serves as the official source for defining the requirements of original and updated Local Mitigation Plans.

The Guide is used by federal and state officials to assess and review mitigation plans in a fair, equitable and consistent manner, and to ensure plans meet regulations.

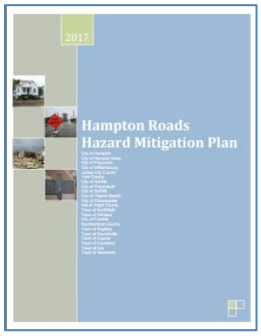
The Guide and the Local Mitigation Planning Handbook can be used in tandem by plan reviewers and plan developers so communities understand the technical requirements and the various ways plans can be developed to meet these requirements.

There are numerous sources of guidance and tools to lead officials through the process of completing a plan (listed later in the chapter). These tools, and the benefits of an approved plan, allow the process and the result to serve as a strong pattern for disaster mitigation, both before and after an event.

This section will provide a detailed level summary of the hazard mitigation plan development or update process.

The Community Can Develop/Update its Own Plan or Participate with Other Jurisdictions

The first decision in developing a new hazard mitigation plan is determining the jurisdiction — or combination of jurisdictions — that will participate in the planning process and then seek funding to support plan development. Multi-jurisdictional planning can be a way for local governments to save plan development costs. They are appropriate for a combination of local governments with similar characteristics and usually confronted with the same types of natural hazards. When a plan is updated a community may decide to change this configuration.



For example, communities in southeastern Virginia decided to merge six hazard mitigation plans into the 2017 update of the Hampton Roads Hazard Mitigation Plan[4], which now covers 22 smaller jurisdictions.

The state and FEMA often provide funding for hazard mitigation plan development and updates. Resources are listed later in this chapter.

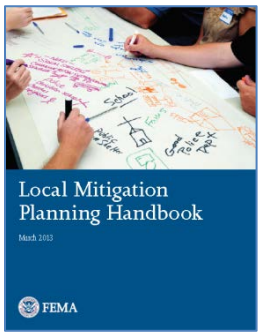
Local governments are defined by FEMA as, "any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under state law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity." FEMA has based the definition of local government on local government authorities listed as communities with floodplain management ordinances within the National Flood Insurance Program.

The Plan May be Developed or Updated by the Local Government or by Consultants

Hazard mitigation plans may be developed or updated by local governments with technical assistance from their state, FEMA or a private consultant. Communities choosing to use a consultant should maintain active involvement with the process, remembering that this plan will be the community's roadmap long after any contract has ended. The plan must have flexibility to meet local needs… even as they change. It may just meet the minimum requirements, but it must have the capacity to be robust and address additional local needs. The result can assist in matching the right combination of resources to make the community safer even if there is no perfect solution, and even if the community's vulnerabilities and resources change.

Once the decision about single or multi-jurisdictional has been made and the community has decided who will develop or update, and have found the funding, the planning process required by FEMA can officially begin.

FEMA's Local Mitigation Planning Handbook



The Local Mitigation Planning Handbook[5] provides guidance to local governments on developing or updating hazard mitigation plans to meet the federal requirements (44 CFR §201.6) for FEMA approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs. The Handbook provides practical approaches and examples for how communities can engage in effective planning to reduce long-term risk from natural disasters. The Local Mitigation Planning Handbook is a tool for local governments to use to develop or update a local hazard mitigation plan. It begins with these important Guiding Principles:

- **Focus on the mitigation strategy.**
  The mitigation strategy is the plan's primary purpose. All other sections contribute to and inform the mitigation strategy and specific hazard mitigation actions.
- **Process is as important as the plan itself.**
  In mitigation planning, as with most other planning efforts, the plan is only as good as the process and people involved in its development. The plan should also serve as the written record, or documentation, of the planning process.
- **This is your community's plan.**
  To have value, the plan must represent the current needs and values of the community and be useful for local officials and stakeholders. Develop a mitigation plan that best serves your community's purpose and people.

Required Steps in the Hazard Mitigation Planning Process

A Mitigation Planning Process: Key stakeholders from the groups discussed in Chapter 2 need to be involved in the process of creating or updating the plan so the final product will be supported and used by the community.

Key stakeholders are discussed in Chapters 2.

At the beginning of the plan development process a local planning team, stakeholders' committee, or steering committee is established to lead or assist in holding public meetings, gather input on local hazard and mitigation measures, review the final plan, and assist with implementation. The public involvement process must be documented as part of the plan. Public involvement is critical to ensuring the plan truly addresses the needs and desires of the community. A variety of informational materials and methods, such as news media, social media, fliers, surveys, and websites, are useful for reaching out to the public during the planning process. Disaster Risk Reduction Ambassadors may already have begun this process when seeking support for community disaster resilience efforts and

already have social media following on Twitter and content for sharing on Facebook. Public involvement activities should include methods designed to improve public awareness by presenting information (one-way communication), as well as to solicit input to inform the plan's content (two-way communication). Public outreach materials and activities should ensure equal access and meaningful participation of all individuals with access and functional needs, including individuals from racially and ethnically diverse backgrounds, with and without limited English proficiency, seniors, children, and members of underserved populations.

Hazard Identification/Risk Analysis: The process of identifying local hazards must address floods, windstorms, fire, tornadoes, coastal storms and geologic hazards and other localized hazards. Some communities additionally choose to address technological and human-made hazards. The Hazard Identification/Risk Analysis combines hazard history with the possibility that a hazard can strike the area. This thorough analysis may include data researched online, through historic records, and by reviewing plans completed by the state or neighboring jurisdictions. Accessing a Geographic Information System (GIS) can provide a good way to display the location, extent, and severity of the hazards. GIS lets us visualize, question, analyze, and interpret data to understand relationships, patterns, and trends which, for example can make it useful in comparing hazards to vulnerable facilities.

Vulnerability Assessment: FEMA's requirement for vulnerability assessment involves examining the facilities and populations most likely to be impacted by the identified hazards. Listing the buildings in the floodplain or likely to be damaged during a windstorm, or other hazard, allows communities to determine what are their most critical facilities to prioritize for mitigation projects. Overlaying the hazard history and probable occurrence shows the most vulnerable areas. This is often done using an algorithm to weigh and compare vulnerabilities of people, structures, and critical infrastructure to specific hazards, as well as to the overall combination of hazards the state, region or community faces.

Multiple Hazard Mitigation Strategy: The Vulnerability Assessment results in identification of priority areas for hazard mitigation. For instance, there may be several homes that have been flooded twice in the last decade; a power station that loses capacity in even mild windstorms, or a hospital that's accessibility is challenged by sink holes. The local planning team should lead the process of identifying goals, objectives, and the appropriate mitigation actions or strategies. Mitigation actions may be non-structural such as targeted planning, revision of building codes, or public education; or can be structural, such as wiring for generators or elevation of flood-prone structures. Mitigation actions must be reviewed by the public and evaluated to determine that they are cost effective and will result in the desired impact.

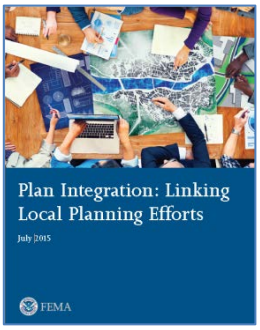
Maintenance: The plan must address how it will be monitored, linked to existing plans already in use within the community, implemented; and must involve continued public input. Coordination with other planning efforts is critical to achieving success. It should also provide a schedule for evaluating and updating, at a minimum of every five years.

Approval and Adoption: Hazard mitigation plans are reviewed by states and approved by FEMA. FEMA will provide "approvals pending

adoption" that are the notice to proceed for jurisdictions to adopt their plan.

Linking Mitigation into Local Planning Efforts

FEMA requires the local hazard mitigation plan include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans. When plans and policies are integrated across disciplines, coordination between government agencies improve and mitigation principles are incorporated into plans, policies and procedures that ensure consideration of potential hazards as a key factor in future development.



FEMA's Plan Integration: Linking Local Planning Efforts[6] publication describes a process by which communities can look critically at their existing planning framework and align efforts with the goal of building a safer, smarter community in the long-term.

Plan integration involves the incorporation of hazard mitigation principles and actions into community plans, and community planning mechanisms into hazard mitigation plans. Plan integration is specific to your community and depends on the vulnerability of your built environment to a variety of hazards.

There are two primary ways to effectively accomplish plan integration:

1. Integrate natural hazard information and mitigation policies and principles into local planning mechanisms and vice versa.
    - Include information on natural hazards (past events, potential impacts, and vulnerabilities).
    - Identify hazard-prone areas throughout the community.
    - Develop appropriate goals, objectives, policies, and projects.
2. Encourage collaborative planning and implementation and inter-agency coordination.
    - Involve key community officials with the authority to execute policies and programs to reduce risk.
    - Collaborate across departments and agencies with key staff to help share knowledge and build relationships important to the successful implementation of mitigation activities.

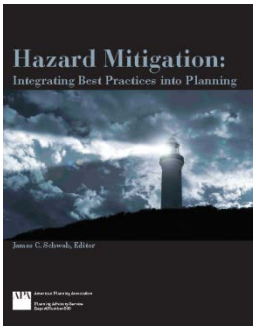
Local plans should take advantage of their links to community planning activities, particularly land-use planning, and in terms of hazard identification and analysis and other key components.

Unlike a comprehensive plan, the local hazard mitigation plan has no legal status for guiding local decision-making regarding capital expenditures or land use. Linkage avoids conflicting outcomes when plans are not coordinated and assures improved outcomes through synchronization.

Other benefits of state, local, and internal community coordination include:

- Improved pre- and post-disaster decision making at each level
- Formation of partnerships between planners and emergency managers at each level
- Expansion of external funding opportunities for state and local governments

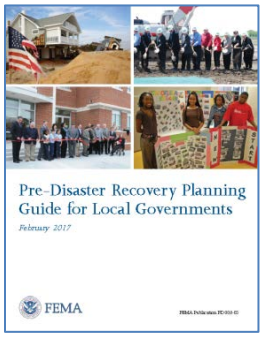
- Facilitation of the post-disaster return to normalcy for states and communities
- Resolution of locally sensitive issues with community-based rather than externally imposed solution (Hazard Mitigation: Integrating Best Practices into Planning[7])



- Taking into account a climate-informed science approach that uses the best available, actionable data and methods that integrate current and future changes in flooding

Linking Hazard Mitigation Plans with Pre-Disaster Recovery Planning

Another important planning linkage is with pre-disaster recovery planning, which allows communities to map out their route to safe reconstruction following a natural disaster. The recovery planning process is another opportunity to pull stakeholders together during normal times, without the pressures of disaster response and recovery. These plans should be tied into the community's hazard mitigation plan and the community's Comprehensive Plan.



FEMA's Pre-Disaster Recovery Planning Guide for Local Governments[8] (February 2017), details pre- and post-disaster critical planning tasks and the type of planning needed to accomplish them:

> "A successful hazard mitigation program and other pre-disaster planning can set the stage for a more sustainable and resilient community by positioning the community to be able to adapt to changing conditions, identify future natural and human-related disaster threats and hazards, and withstand and rapidly recover from disruption due to future emergencies. By addressing potential risks and developing solutions, policies, and action statements, communities become both more resilient and sustainable." FEMA's *Pre-Disaster Recovery Planning Guide for Local Governments*, 2017

- Strategic Planning: Driven by policy, establishes planning priorities
- Operational Planning: Describes roles and responsibilities, focuses on coordinating and integrating the activities of the whole community
- Tactical Planning: Identifying specific projects; managing and leveraging resources

Table 3.1 Resources for Hazard Mitigation Planning

Resource	Type of Resource and Intent
American Planning Association (APA) / FEMA: Hazard Mitigation: Integrating Best Practices into Planning For more information: https://www.fema.gov/media-library-data/20130726-1739-25045-4373/pas_560_final.pdf	• Provides best practices for integrating hazard mitigation into all aspects of the local planning process • Includes case studies that illustrate successful implementation of these best practices to achieve meaningful results in reducing losses of both life and property on account of natural hazards
APA: Planning for Community Resilience For more information: https://www.planning.org/nationalcenters/hazards/naturallyresilient/	• Describes the Naturally Resilient Communities (NRC) program • Promotes the role nature-based solutions can play in helping reduce flood risk for communities while providing other benefits, such as improved water quality and enhanced recreational opportunities and wildlife habitat — all of which positively impacts local economies
FEMA Local Mitigation Planning Handbook For more information: https://www.fema.gov/media-library/assets/documents/31598	• Official guide for local governments to develop, update, and implement local mitigation plans
FEMA Plan Integration: Linking Local Planning Efforts For more information: **https://www.fema.gov/media-library-data/1440522008134-ddb097cc285bf741986b48fdcef31c6e/R3_Plan_Integration_0812_508.pdf**	• A tool to help communities analyze local plans to document existing integration and further integrate hazard mitigation principles into local planning mechanisms and vice versa • Includes specific steps to conduct integration of local planning mechanisms
(FEMA) Pre-Disaster Recovery Planning Guide for Local Governments For more information: https://www.fema.gov/media-library/assets/documents/129203	• Designed to help local governments work with community stakeholders to develop pre-disaster recovery plans • Details six key planning steps, provides planning examples, and appendices with references, tools, and templates

Resource	Type of Resource and Intent
National Association of Development Organizations (NADO) Financial Planning for Natural Disasters: A Workbook for Local Governments and Regions For more information: https://www.nado.org/wp-content/uploads/2013/07/Financial-Planning-for-Natural-Disasters_Updated.pdf	• Helps local governments and regions understand their financial vulnerabilities to natural disasters; evaluate their financial capacity to cover the costs of those disasters; identify strategies to close the gap between financial vulnerability and capacity; and identify and address the spillover effects of neighboring local governments' financial vulnerabilities to disasters
National Institute of Science and Technology (NIST) Community Resilience Planning Guide for Buildings and Infrastructure Systems For more information: https://www.nist.gov/topics/community-resilience/community-resilience-planning-guide	• Helps communities integrate resilience plans into their economic development, zoning, hazard mitigation, and other local planning activities that impact buildings, public utilities, and other infrastructure systems
State Level Steering Committees and Resources For more information: http://www.floridadisaster.org/Mitigation/Documents/Disaster_Planning_for_Historic_Resources.pdf	• Standing groups in some states that may provide resource to the process, for example the Florida Division of Historical Resources and "1000 Friends of Florida" Disaster Planning for Florida's Historic Resources
US Army Corps of Engineers (USACE) Planning Resource to States (PAS) Program For more information: http://www.nae.usace.army.mil/Missions/Public-Services/Planning-Resource-to-States/	• Provides resources in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources; for example, wetlands evaluation/restoration, dam safety/failure, flood damage reduction, coastal zone protection, and harbor planning; cost shared on a 50 percent federal and 50 percent non-federal basis

Table 3.2 Resources for Addressing Under-served Populations in Planning

Title	Type of Resource and Intent
Disaster Preparedness in Urban Immigrant Communities: Lessons Learned from Recent Catastrophic Events and Their Relevance to Latino and Asian Communities in Southern California For more information: http://trpi.org/wp-content/uploads/archives/DISASTER_REPORT_Final.pdf	• Contains results of a study on whether limited English proficiency (LEP) immigrants who may be poor and have low levels of education have the information necessary to prepare for and survive a disaster, or whether the social networks, formats, and languages in which they can successfully receive and respond to emergency information are in place • Includes key findings and planning recommendations
U.S. Department of Health and Human Services (HHS): Guidance for Integrating Culturally Diverse Communities into Planning for and Responding to Emergencies: A Toolkit For more information: http://www.aha.org/content/11/OMHDiversityPreparednesToolkit.pdf	• A comprehensive framework and specific guidance for engaging communities to inform the integration of issues related to race, ethnicity, culture, language, and trust into preparedness plans, programs, and actions • Provides for local, state, and federal officials information and a specific set of initiative areas that can assist in informing decisions around programs and policies that work to assure effective outreach and engagement of diverse communities in critical emergency strategies
US Dept. of Health and Human Services (HHS), Special Populations: Emergency and Disaster Preparedness For more information: https://sis.nlm.nih.gov/outreach/specialpopulationsanddisasters.html	• Website provides information on disaster planning for 11 different populations; provides resources and guidance as well as lessons learned from prior disasters

Table 3.3 Resources for Public Participation in the Planning Process

Title	Type of Resource and Intent
FEMA Risk MAP Community Engagement For more information: https://www.fema.gov/media-library-data/20130726-1800-25045-2028/risk_map_community_engagement.pdf	• A set of supporting, customizable tools and templates to assist Risk MAP Project Teams in communicating with their local partners, applicable to any community engagement effort
NOAA Planning and Facilitating Collaborative Meetings For more information: https://coast.noaa.gov/data/digitalcoast/pdf/planning-and-facilitating-collaborative-meetings.pdf	• Training on collaborative processes, including: information on six steps of the collaborative process and useful information to assist with the process for each step; facilitation skills necessary to run the collaborative process and individual meetings; and tools that can be used throughout the process and at individual meetings
NOAA Seven Best Practices for Risk Communication For more information: https://coast.noaa.gov/digitalcoast/training/risk-communication.html	• Online training; interactive webinar introduces participants to seven best practices, numerous techniques, and examples for communicating about coastal hazards
NOAA Stakeholder Engagement Strategies for Participatory Mapping For more information: https://coast.noaa.gov/data/digitalcoast/pdf/participatory-mapping.pdf	• Provides simple strategies for facilitators leading a participatory mapping process • Focuses primarily on stakeholder involvement

The Mitigation Strategy

Recall that one of the guiding principles described in the Local Mitigation Planning Handbook is, "Focus on the mitigation strategy. The mitigation strategy is the plan's primary purpose. All other sections contribute to and inform the mitigation strategy and specific hazard mitigation actions."

> **Focus on the mitigation strategy. The mitigation strategy is the plan's primary purpose.**

The hazard mitigation strategy in the plan is the community's true roadmap to disaster resilience.

Plans generally include four primary types of mitigation actions to reduce long-term vulnerability:

- Local plans and regulations
- Structure and infrastructure projects
- Natural systems protection
- Education and awareness programs

This section will provide examples of mitigation actions in each of these primary types. All require technical expertise. Resources are provided after the examples.

Local Plans and Regulations

The following example includes changes to a community's building code as part of a mitigation strategy intended to protect assets vulnerable to climate change impacts.

EXAMPLES OF CHANGES TO BUILDING CODES

- Using an increased Freeboard value approach – adding a requirement of an additional 2 feet to the base flood elevation… or even an additional 3 feet for critical areas
- Requiring building to the 500-year (0.2 percent-annual-chance) flood elevation, rather than the traditional 100-year standard
- Adding a higher floor elevation requirement that recognizes 1-2 foot freeboard; see FEMA Fact Sheet, Building Higher in Flood Zones: Freeboard – Reduce Your Risk, Reduce Your Premium[9]
- Wider and more limited-use floodways which may provide multiple co-benefits such as recreational and wind-break purposes
- Mandating that critical facilities be located outside the 500-year floodplain
- Prohibiting basements below flood level on filled lots
- Elevating parking lots for new, non-single family buildings
- Placing many restrictions on levee construction and new uses behind levees

Freeboard Pays Off

Ravit Michener purchased her commercial building some 13 years ago and found that it had been elevated to provide a flood protection level of two feet of freeboard above the base flood elevation. Her 2,600 square foot, two-story business structure is located approximately 30 feet from the Big Thompson River in Estes Park, Colorado.

There is no freeboard requirement for Estes Park, but, as an extra precautionary measure, Will Birchfield, city building official, always advises individuals to raise structures above the base flood elevation. "Of, course it's up to the individuals to decide," said Birchfield.

In Michener's case, the elevation certificate also helped reduce her flood insurance rate. "It always bugged me that there was this big swale between me and my neighbor at the end of the property, but now I get it," said Michener. During the flood of 2013, "It was like a four-foot river between me and my neighbor."

Recent destructive Colorado storms and flooding affected approximately 2,000 square miles of the state. Nine individuals died and there was nearly $2 billion in property damage.

Michener's town, Estes Park, was hit hard. The town received more rain in five days than it usually does in a year. "We have lived in the city for 20 years and have never seen the rivers breach the banks until the September flood," said Michener. Besides owning the spa and retreat business, Michener, her husband Monty, and daughter Mia have a home near Fish Creek, not far away. On the day of the storm, they realized there was a strong possibility that their home might flood, so they packed up their belongings and moved into a vacation rental above the business. This proved to be a good decision — they lived in the building for three weeks while wet carpet was being ripped out of their flooded home and mud-soaked drywall was being removed.

"During the flood, it was like a huge river surrounding our building," recalls Michener. "We were totally an island. The entire cul-de-sac was an ocean and surrounding buildings were flooding except for the business next door, which also was elevated." "Not only were the banks of the Big Thompson River overflowing behind the business, but water was coming through the streets from another direction," she said.

Michener was grateful to get back in business without the clean-up other businesses were experiencing. "The loss would have been huge in so many ways if this building had flooded, even though we had flood insurance," said Michener. "I don't want to even think about the problems we would have encountered; not only financially, but emotionally as well."

Structure and Infrastructure

Some experts believe that global warming and climate change have – or will in the future – result in more frequent tornadoes and hurricanes, and that they will become even more dangerous. Recent research using sophisticated computer modeling supports some, but not all, of those predictions. A mitigation strategy for protection from high winds includes structural mitigation actions and can be required by code.

FEMA encourages communities to incorporate climate change considerations in their HMA project scoping and development: (FEMA Fact Sheet: FY15 Hazard Mitigation Assistance Guidance[10])

- A code-ordered set of hurricane straps and rafter-to-plate tie rods can keep a home together, even in the face of 100-plus mph hurricane winds.
- Sturdy storm shutters and a few other simple features such as break-away eaves and carefully following building codes when nailing roofs can help save homes from high wind events. They can stop wind-blown projectiles, keep broken windows from allowing storm-driven water to enter and prevent walls from buckling under the force of gale-force winds. Even storing pre-cut plywood window coverings, designed to be screwed on before a storm arrives, can do the job.
- Only concrete walls with steel reinforcing can be expected to survive a direct hit with the force of the 250 mph winds of an EF-5 tornado. Even concrete block is no guarantee against winds that can strip the blacktop off a rural road. Most areas turn to either individual tornado shelters, built into homes, or large shelters in schools or municipal buildings.
- Individual safe rooms are usually not mandated, merely strongly urged for both new construction and retrofitting. Funding for safe rooms is addressed in Chapter 4.

Funding for safe rooms is addressed in Chapter 4.

Safe Rooms Save Lives

As we've seen in other modules, it's not difficult to find stories involving real people who've followed hazard mitigation advice and benefited when a natural disaster occurred. Take Keith, Deborah, and Matthew Crumbley of Cullman, Alabama, who obtained funding for a safe room back in 2004. Seven years later, an EF5 tornado shattered their rural community, causing mass destruction and killing the Crumbley's next door neighbor. As the tornado raged over their community, Deborah, her son Matthew, both of her parents, and her cats were safely tucked inside their above-ground safe room. "Matthew and I had been in the shelter earlier that morning," recalled Deborah later. "We kept hearing the weatherman say, 'It's going to be bad. It's going to be bad.' So we got in.

"Around lunch time, my parents came over …" Nothing happened, so after a while, Deborah said, they began to think about leaving the shelter. But by the time she started to say something, "I felt the pressure," said Matthew. "My ears popped and I thought I'd seriously gone deaf. Then something started hitting against the front of the shelter. This was followed by 2 to 3 minutes of calmness. Then things were hitting against the back of the shelter." "While we were in the eye of the storm," said Deborah, "we could hear everything hitting the shelter. It sounded like a train …. Then we heard one final loud bang. We knew, before we opened the door, that the garage was gone. We had no idea when we came out that the entire house was gone!"

Meanwhile, Deborah's husband, Keith, had ridden out the storm in a shelter at work. After the storm, he raced home. As he approached the area, "I couldn't see my house or the safe room. So I jumped out of my truck and started running. I just knew everyone was dead. Then I heard Debbie say, 'Here I am.' That's about the sweetest sound you could hear when you think somebody's gone."

As grant recipients, we had to go through a process," explained Deborah. "We had to choose a contractor from a list. Then, we had to make certain that the safe room was certified." The total cost of the safe room was $4,800; however, the Crumbley's were reimbursed 75 percent of the cost through FEMA's Hazard Mitigation Grant Program.

As the massive tornado passed directly over their home, however, the safe room became priceless.

Natural Systems Protection

Effects of climate change vary by region but can result in, among other concerns, higher ocean levels, increased flooding, extreme temperature swings, and drought. Even if the climate stabilized, and no further climate change were to take place, millions of people would still be at risk and that risk would continue to grow. Adaptation measures based on natural systems protection are already in place in many areas, as the examples below show. These actions can be expanded or modified to prepare for climate change. But additional measures, such as new technologies and policies, may also be needed and included in a mitigation plan strategy.

The climate adaptation examples are excerpts from the website of the Environmental Protection Agency (EPA), Adapting to Climate Change[11], which describes what communities, as well as other stakeholders, can do to adapt to a changing climate.

Agriculture and Food Supply

- Develop crop varieties that are more tolerant of heat, drought, or flooding from heavy rains.
- Provide more shade and air flow in barns to protect livestock from higher summer temperatures.

Coasts

- Preserve wetlands and open spaces to protect coastal communities from flooding and erosion from storms and sea level rise.
- Improve evacuation planning for low-lying areas to prepare for increased storm surge and flooding.

Ecosystems

- Protect and expand wildlife habitats to allow species to migrate as the climate changes.
- Reduce pollution, habitat loss, and other stressors that make ecosystems more vulnerable to climate change.

Energy

- Increase energy efficiency to help offset rises in energy consumption, such as from more air conditioning use as temperatures warm.
- Strengthen energy production facilities to withstand increased flood, wind, lightning, and other storm-related stresses.

Human Health

- Set up early warning systems and emergency response plans to prepare for more extreme weather events.
- Educate people to help them avoid diseases that could become more prevalent as the climate changes, such as those carried by mosquitoes or ticks.
- Plant trees and expand green spaces in cities to reduce the "urban heat island" [5] effect.

Water Resources

- Improve water use efficiency, and build additional water storage capacity.
- Protect and restore stream and river banks to provide wildlife habitat and safeguard water resources.

Education and Awareness Programs

Regional, tribal, state, and federal agencies often work in concert as state emergency management agencies connect local governments to FEMA and other federal agencies for services.

FEMA has embarked on a multi-year effort to update and transform flood maps into more reliable, easy-to-use, and readily available digital products. This effort is now called Risk MAP (Risk Mapping, Assessment, and Planning)[12]. The mission for Risk MAP is to deliver quality data that increases public awareness and leads to action that reduces risk to life and property. The program builds on current FEMA flood hazard data and maps and aims to enable communities and citizens across

the country to more efficiently obtain flood hazard data, learn their flood risk, and make informed decisions about development, floodplain management and mitigation projects that will potentially limit damages in future flooding events. A community's mitigation strategy could include full participation in Risk MAP opportunities, to address flood risks through community education and awareness.

The five goals of the Risk MAP program are:

- Address gaps in flood hazard data to form a solid foundation for flood risk assessments, floodplain management, and actuarial soundness of the National Flood Insurance Program
- Ensure that a measurable increase of the public's awareness and understanding of risk management results in a measurable reduction of current and future vulnerability to flooding
- Lead and support state, local, and tribal communities to effectively engage in risk-based mitigation planning resulting in sustainable actions that reduce or eliminate risks to life and property from natural hazards
- Provide an enhanced digital platform that improves management of limited resources, stewards information produced, and improves communication and sharing of risk data and related products to all levels of government and the public
- Align risk analysis programs and develop synergies to enhance decision-making capabilities through effective risk communication and management

Summary

Climate adaptation, disaster-risk reduction, and hazard mitigation involve working with moving targets, which change with development patterns, changing natural processes, the climate, the economy and human desires and visions of where we want to live and work. Technical assistance is very much needed to help select the mitigation actions that best meet those needs and are technically feasible and cost effective.

Good mitigation benefits families and businesses, and large projects such as limiting use of floodways and other wise land use can have very high benefits compared to their cost, including money saved many times as well as security of investments and safety.

Table 3.4 Resources for Mitigation Strategy Development

Resource	Support
ACADEMIC RESOURCES • May conduct technical research on a specific hazard and mitigation measures • May provide resources for access to GIS technology. • Others study all hazards or focus on the social impacts of disasters • Many university programs work in concert with other academic institutions and through public-private partnerships **Examples:**	
Center for Earthquake Research and Information (CERI), University of Memphis For more information: http://www.memphis.edu/ceri/research/index.php	• Addresses critical needs through research, graduate student education, operation of state-of-the-art seismic and GPS networks, and dissemination of technical and practical information to the private and public sectors
International Hurricane Research Center (IHRC), Florida International University For more information: http://www.ihrc.fiu.edu/	• Multi-disciplinary research and education organization focused on reducing hurricane damage and loss of life through more effective mitigation
National Center for the Study of Preparedness and Catastrophic Event Response (PACER), Johns Hopkins University For more information: http://www.pacercenter.org/	• Conducts and provides scientific research focused on medical and public health preparedness strategies, response capabilities, and surge capacity
Natural Hazards Center, University of Colorado Boulder **For more information:** **https://hazards.colorado.edu/**	• Serves as a national and international clearinghouse of knowledge concerning the social science and policy aspects of disasters • Collects and shares research and experience related to preparedness for, response to, recovery from, and mitigation of disasters, emphasizing the link between hazards mitigation and sustainability to both producers and users of research and knowledge on extreme events
Stephenson Disaster Management Institute (SDMI), Louisiana State University For more information: https://www.sdmi.lsu.edu/about-us/	• Specializes in disaster response management, facilitating collaboration between emergency management practitioners and academic researchers; conducts applied research and disseminates best practices to individuals, businesses, and practitioners

Resource	Support
(FEMA) Building Code Resources For more information: https://www.fema.gov/building-code-resources	• Provides guidance on hazard-resistant provisions in the building codes for property owners, engineers and design professionals, building codes officials, and the general public

FEMA Building Science Branch
 	
For more information:
https://www.fema.gov/building-science
	• Provides technical services for the Federal Insurance and Mitigation Administration (FIMA), developing and producing multi-hazard mitigation guidance for creating disaster-resilient communities
	• Activities include
	  o Deploying Mitigation Assessment Teams to conduct post-disaster engineering investigations for both man-made and natural hazard events
	  o Developing publications, guidance materials, tools, technical bulletins, and recovery advisories incorporating the most up-to-date building codes, floodproofing requirements, seismic design standards, and wind design requirements for new construction and the repair of existing buildings
	• Provides technical support for:
	  o Development and adoption of model building codes and standards
	  o National Flood Insurance Program (NFIP) for public and private sector stakeholders
	  o National Earthquake Hazards Reduction Program (NEHRP)
	  o National Windstorm Impact Reduction Program (NWIRP)
	• Pursues outreach strategies for communicating building science issues

Resource	Support
(FEMA) Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards For more information: https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf	• Provides a resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters • Addresses 16 natural hazards • Suggested hazard mitigation actions are summarized into four types: (1) Local Planning and Regulations, (2) Structure and Infrastructure Projects, (3) Natural Systems Protection, and (4) Education and Awareness Programs • Examples of activities that can be used to accomplish each hazard mitigation goal are identified, as well as the relevant FEMA publications or resources, if applicable
FEMA Office of Environmental Planning and Historic Preservation (EHP) For more information: https://www.fema.gov/office-environmental-planning-and-historic-preservation	• EHP experts provide specialized guidance and practical long-term planning Resource to communities across the county to ensure that proposed projects align with environmental planning and preservation requirements
FEMA NEHRP National Earthquake Technical Resource Program For more information: https://www.fema.gov/national-earthquake-technical-Resource-program	• Resources include instructor-led training courses, technical resources, tool-development aid and special-project support
(FEMA) National Flood Insurance Program (NFIP) Community Rating System (CRS) For more information: https://www.fema.gov/media-library/assets/documents/9998	• Technical Resource in designing and implementing some activities is available to community officials at no charge
Georgetown Climate Center Adaptation Clearing House For more information: http://www.adaptationclearinghouse.org/	• Maintains an adaptation clearinghouse of resources, organizations, and case studies, and includes tools, technical resources, and information for local governments

Resource	Support
PROFESSIONAL ASSOCIATIONS Professional associations can be great sources of technical knowledge, best practices and other technical Resource for developing the Hazard Mitigation Strategy: American Bar Association (ABA): http://www.americanbar.org/aba.html American Planning Association (APA): https://www.planning.org/ American Society Civil Engineers (ASCE): http://www.asce.org/ American Society for Public Administration (ASPA): http://www.aspanet.org/ Americans with Disabilities Act (ADA) National Network: https://adata.org/ Association of American Medical Colleges, (AAMC): https://www.aamc.org/ Association of State Floodplain Managers (ASFPM): http://www.floods.org/ Black Emergency Managers Association (BEMA): http://www.blackemergmanagersassociation.org/ International Association of Emergency Managers (IAEM): https://www.iaem.com/ International Network of Women in Emergency Management (INWEM): http://inwem.org/wp/ National Association of Emergency Managers (NEMA): https://www.nemaweb.org/ National Association of Home Builders: http://www.nahb.org/find/searchresults#q=mitigation National Mitigation Alliance, (NMA): http://www.nemaweb.org/index.php/national-mitigation-alliance National Tribal Emergency Management Council (NTEMC): http://ntemc.org/ Natural Hazard Mitigation Association (NHMA): http://nhma.info/ US Department of Agriculture (USDA) National Institute of Food and Agriculture Extension (NIFA): https://nifa.usda.gov/extension	
US Army Corps of Engineers (USACE) Floodplain Management Services For more information: http://www.nae.usace.army.mil/Missions/Public-Services/Flood-Plain-Management-Services	• Provides a full range of technical services, studies and planning guidance to support effective floodplain management • General technical resource includes determining: site-specific data on obstructions to flood flows, flood formation, and timing; flood depths, stages or floodwater velocities; the extent, duration, and frequency of flooding; information on natural and cultural flood plain resources; and flood loss potentials before and after the use of floodplain management measures • Additional types of studies conducted under the FPMS program include: floodplain delineation/hazard, dam failure analyses, hurricane evacuation, flood warning, floodway, flood damage reduction, stormwater management, flood proofing, and inventories of flood prone structures

Resource	Support
USACE Silver Jackets For more information: http://www.iwr.usace.army.mil/Missions/Emergency-Management/Silver-Jackets/	Program brings together multiple state, federal, and sometimes tribal and local agencies to learn from one another in reducing flood risk and other natural disasters. By applying their shared knowledge, the teams enhance response and recovery efforts when such events do occur. Joint initiatives help to: • Facilitate strategic life-cycle flood risk reduction. • Create or supplement a continuous mechanism to collaboratively solve state-prioritized issues and implement or recommend those solutions. • Improve processes, identifying and resolving gaps and counteractive programs. • Leverage and optimize resources. • Improve and increase flood risk communication and present a unified interagency message. • Establish close relationships to facilitate integrated post-disaster recovery solutions.
USDA Storm Water Management For more information: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ia/home/?cid=nrcs142p2_008528	• USDA Natural Resources Conservation Service o Describes low impact development mitigation for stormwater run-off • Depicts how rain gardens can absorb most rainfall events from small site developments, such as single-family housing

Case example of Collaborative Community Resilience: Multi-Jurisdictional Hazard Mitigation Planning

HARRIS COUNTY, TX – Harris County is the nation's third largest county with 34 cities and a population of 4.4 million residents. The County faces significant natural hazards, such as floods, hurricanes, storm surge, and severe thunderstorms. In an effort to mitigate the impacts of these disasters, Harris County adopted a multi-hazard mitigation plan that involves multiple jurisdictions and stakeholders. The County's multi-jurisdictional mitigation planning process can be viewed as a model of collaborative planning that enhances community resilience and reduces long term vulnerability.

The County's mitigation plan was originally adopted in 2005, updated in 2010, and updated for a third time in 2015. Since 2005, the plan has grown from 26 jurisdictions to 33 jurisdictions, four Private Non-Profits (PNPs) and several stakeholders. The combination of several partners, subject matter experts and community involvement led to the development of a mitigation plan that truly promotes collaboration and community resilience within the County. The collaborative planning approach used in Harris County integrates various mitigation efforts of the County and over 30 jurisdictions into a single document.

Due to the size and scope of Harris County, the multijurisdictional planning process takes approximately two-and-a-half years to update the mitigation plan. This time frame allows each jurisdiction to include its own unique risks, impacts, and vulnerabilities due to natural hazards. "This collaborative approach allows each jurisdiction the opportunity to not only meet FEMA requirements, but also to better familiarize each other with the vulnerabilities and needs of the whole community to enhance resilience," said Mark Sloan, Harris County Emergency Management Coordinator.

Harris County utilizes a Direct Representation Model, where each jurisdiction participating on the plan maintains its own Local Mitigation Planning Team (LMPT) to coordinate jurisdiction-specific mitigation planning efforts. To coordinate multiple jurisdictions, Harris County also established a Multi-Jurisdictional Planning Team (MJPT), which is a coordinating entity that takes a collaborative approach and allows for consensus building on countywide sections of the plan. The MJPT is chaired by the Harris County Office of Homeland Security and Emergency Management (HCOHSEM) and consists of individuals that directly represent each jurisdiction. Stakeholders, such as subject matter experts and PNPs, are also involved and attend certain meetings and workshops to provide input for the plan. The major PNPs involved include the Texas Medical Center, St. Dominic Village, Methodist St. John Hospital, and Houston Hospice.

The County's mitigation plan identifies 15 natural hazards and three technological hazards (Dam Failure, Pipeline Failure, and Hazardous Materials). To conduct a thorough Hazard Identification and Risk Analysis (HIRA) a GIS Risk Analysis Team was assembled with GIS professionals from various local agencies to geospatially analyze parcel-by-parcel each jurisdiction's vulnerabilities and risks from natural and technological hazards. The GIS Team produced a uniform risk analysis across all jurisdictions, which allowed for a comparative and standard assessment methodology. To ensure a holistic approach to

community resilience, the public was encouraged to provide input and feedback on the plan. “Having multiple jurisdictions participate served as a force multiplier and increased the County’s reach across the whole community,” said Francisco Sanchez, Harris County Public Information Officer. Various traditional and emerging mediums were used to connect with the community, such as city websites, social media, and a multitude of local community newspapers. The residents know their communities the best and were able to provide great input to shape the overall mitigation strategies incorporated into the plan. Community resilience was enhanced by creating a single and unified voice on hazard mitigation, created cross-jurisdictional buy-in and support for mitigation projects, and developed working relationships between emergency managers, floodplain administrators, and other development agencies. In addition, it promoted the maximization of Hazard Mitigation Assistance and how these funding opportunities can assist local jurisdictions. The collaborative planning approach contributed to the success of the plan, which resulted in a 1,200-page document with more than 670 mitigation projects to reduce long term vulnerability in the County.

Mitigation Best Practices: https://www.fema.gov/media-library-data/1439557134446-297af7636e8ea1a2e4b0ba7287eed55b/Collaborative_Comm_Resilience_Mitgation_Planning_web.pdf

Chapter 3 References

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11. , U.S. EPA, Adapting to Climate Change: https://www.epa.gov/climatechange/adapting-climate-change
12. FEMA Risk MAP (Mapping, Assessment, and Planning): https://www.fema.gov/risk-mapping-assessment-and-planning-risk-map

What Do We Need?

Finding Pre-Disaster Resources to get to Your Disaster Resilient Destination

Chapter 3 described the process for planning and the technical resources needed to map out the route toward community resilience. A community-developed disaster-risk-reduction effort involves government leaders and community residents and stakeholders working together not only to define a long-term vision for a safer community but also to develop a coordinated effort to secure funding and support, in order to turn the community's vision into reality.

Implementation of the mitigation strategy requires an array of resources.

Chapter 3 outlined many of the available technical resources that can provide the scientific and technical support needed for risk-reduction projects. Other expertise to implement mitigation strategies, such as legal and political support is likely to be needed as well.

Funding for mitigation actions can come from a number of sources, including local funds, state and federal grants, and technical assistance programs. During the hazard mitigation planning process, reviewing a list of potential funding sources will help in prioritizing projects. Some hazard mitigation actions are inexpensive and can be done quickly; while other solutions may become major projects that are very expensive, require federal assistance, and take years to complete.

This chapter will focus on what communities can do pre-disaster to advance the risk reduction measures identified in their hazard mitigation strategy; that is, to know and be supplied with the resources needed to venture out on the road to disaster resilience.

Focus on Codes

Hopefully in the hazard mitigation plan a major emphasis is on reducing the mounting toll of damage from floods and other hazards, by making better land-use planning decisions regarding where development should and should not be allowed. Another emphasis is to provide stronger building codes in areas vulnerable to hazards and to require developers to meet more stringent construction standards, designed to withstand or minimize damage from identified hazards. DRR Ambassadors need to work together to educate policy makers about ways to build safer, more-resilient communities; working in advance of events, rather than responding to them.

Coding Strategies

Responding to climate change by adopting new building codes in an era of rapidly changing building technology and increasingly dangerous weather means aiming at a moving target. As in much of hazard mitigation, what's important is adopting a process, rather than trying to find the "perfect" building code and copying it.

The ultimate responsibility for a community's building code rests with locally elected or appointed officials. DRR Ambassadors must find ways to make sure they are provided with up-to-date information about the latest trends in codes, with risk-assessment data for their area,

and with best practices from across the country. It is also important to mobilize public opinion at the grassroots level to keep pressure on government not to bow to business interests that might attempt to influence the process and dilute code practices in the name of economic development.

In White Paper: The Value and Impact of Building Codes[1], Ellen Vaughn and Jim Turner write, "The U.S. code-development process is unique in the way it brings together all interested parties to participate and decide what is needed and feasible for the construction of new buildings. This cost-conscious, triennial look at what a safe building can be and how it should perform provides savvy builders and building suppliers with critical information on what consumers want and where the market is headed."

"Model codes allow building suppliers to target a national market. Since markets for building materials and technologies are becoming increasingly international, U.S. manufacturers require a strong domestic base in which to develop the new products needed to compete. Regularly upgraded building codes ensure new products and practices make their way into buildings when the time is right and the practices are no longer experimental. The code-development process assesses the technology landscape and consumer demand, and creates a model code that can apply innovations gradually across the building sector, reducing the risk for individual builders and contractors."

"The process of updating model codes every three years is optimal to ensure that new technologies, materials and methods, as well as better approaches to health and safety, can be incorporated into the next generation of buildings with sufficient time for proof of performance. Regular, incremental improvements help us continue to build better and smarter buildings, as cost effectively as possible."

The strategy for DRR Ambassadors is to make sure their local jurisdictions have bought into the three-year cycle, and are using the improved model codes that are best suited for their particular local hazards, climate, social situation, and economy.

Local citizens need to be vigilant; keeping pressure on elected representatives and monitoring news media for any threats to the smooth adoption of updated codes that protect human life, ensure operability of critical components of the community's economy, and achieve reduction in economic losses from foreseeable natural events. For more information on hazard-mitigation building codes, go to http://www.fema.gov, especially: http://www.fema.gov/building-code-resources

Funding Risk Reduction Pre-Disaster

Individual Funding

Individual funding may be a possibility if individuals see the value of their investment in reducing future risk to themselves and their families. For example, the costs associated with building safe rooms may be a problem for some homeowners. One argument that can help is a discussion of the increase in the value of a home that includes a shelter. Kevin Simmons of Austin College and the Federal Alliance for Safe Homes has studied tornado safe rooms and found they can increase the sale price of a home by an average of about 3.5 percent. Well-built tornado safe

rooms typically cost $4,000 to $5,000, but it's possible that community-backed large scale contracting could reduce that price.

Local Funding

Local investment may be available for small infrastructure projects through a community's capital improvement budget; other projects may be paid for through budget line-item requests. Local jurisdictions may also decide to fund mitigation actions through special-purpose assessments, impact fees, or tax increment financing.

State Funding

Each state has agencies or programs that may provide funds for mitigation actions. For example, the Pennsylvania Department of Environmental Protection's annual "Grow Greener" grant "funds projects that protect or improve water quality by mitigating non-point sources, including agricultural, urban runoff, and abandoned-mine drainage;" the state Historical and Museum Commission funds construction grants for maintenance and repair of historic properties, and project grants such as historic site surveys, archaeological surveys, feasibility studies, and historic structure reports.

Source: Delaware Valley Regional Planning Commission[2]

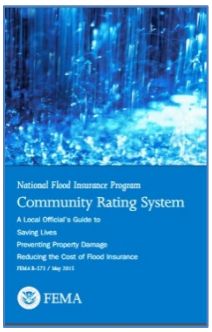
Federal Funding

This is the primary source of pre-disaster funding for risk reduction.

Federal programs that are only available after a presidential disaster declaration will be discussed in Chapter 5.

It is important to note that many pre-disaster funding programs award money for projects on a competitive basis. Some federal mitigation grants require a minimum of 25 percent of the total project cost to be non-federal. Local communities often pass that cost on to the individual property owner. This section describes some of the major federal pre-disaster sources of disaster resilience funding or savings. A summary of each program and a hyperlink to the information source is included at the end of the section.

Community Rating System (CRS)



The NFIP's Community Rating System (CRS)[3] is a voluntary program that recognizes and encourages community floodplain management activities that *exceed* the minimum requirements.

When communities decide to practice enhanced mitigation, flood-insurance premium rates for the area can be discounted to reflect the reduced flood risk. CRS has three goals:

- Reducing flood damage to insurable property
- Strengthening and supporting the insurance aspects of the NFIP
- Encouraging a comprehensive approach to floodplain management

DRR Ambassadors are strongly encouraged to promote participation in the Community Rating System as a means for improving community resilience. Participation in CRS allows jurisdictions to take control of efforts to vastly reduce the risk presented by flooding. Encouraging active participation in CRS can give DRR Ambassadors the vehicle to generate community support for all disaster-resilient

efforts because people that have flood insurance benefit directly from their community's participation. In addition, the CRS program provides an array of measures on which to improve disaster resilience.

FEMA Hazard Mitigation Assistance (HMA) Program

Currently, FEMA administers three programs that provide funding for eligible mitigation planning and projects that reduce disaster losses and protect life and property from future disaster damages. The three programs are the Hazard Mitigation Grant Program, the Flood Mitigation Assistance Program, and the Pre-Disaster Mitigation Program.

The Hazard Mitigation Assistance Guidance[4] consolidates each program's eligibility information and outlines the common elements and unique requirements among the grant programs so that federal, state, tribal, and local officials can easily identify key similarities and differences between the programs.

Hazard Mitigation Grant Program (HMGP)

HMGP assists in implementing long-term hazard mitigation planning and projects following a presidential major disaster declaration.

HMGP will be discussed in detail in Chapter 5.

Flood Mitigation Assistance (FMA) Program

FMA provides funding to states and communities for measures that reduce or eliminate the *long-term risk* of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The assistance program provides grants for mitigation planning, projects and technical assistance, with a goal of reducing claims under the NFIP.

A priority of the FMA Program is to fund flood-mitigation activities that reduce the number of repetitive loss structures – those that have sustained two or more losses, each exceeding $1,000, within a ten-year period. FMA grant amounts vary with annual appropriations.

Pre-Disaster Mitigation (PDM) Program

PDM provides funds to states, territories, tribal governments, communities, and universities, for hazard-mitigation planning and the implementation of structural mitigation projects prior to a disaster event. Funding these plans and projects should reduce overall risk to the population and structures, while also reducing reliance on funding from actual disaster declarations.

Grants are awarded on a nationally competitive basis. The states serve as program administrators and those with at least 70 recognized properties receive an annual allocation based on the number of severe repetitive loss properties in their state. A local match of 25 percent is required unless the state plan has been amended to address severe repetitive loss properties. States with a FEMA approved plan amendment receive a 90 percent federal match with a 10 percent state or local match required. PDM funding depends on the

amount Congress appropriates each year for those programs. In FY 2016, the total amount of funds distributed under the FY 2016 PDM Grant Program was $90,000,000.

Either the state Emergency Management Agency or the office with primary emergency management responsibility is eligible to apply directly to FEMA for PDM Grant Program funds as an applicant. Communities apply to the state as subapplicants.

Environmental Protection Agency (EPA) Clean Water State Revolving Fund (CWSRF)

The CWSRF is a source of low cost financing for a wide range of activities to help communities become more resilient to extreme weather and permanent climactic changes. These activities include energy and water efficiency upgrades, stormwater management, and projects that strengthen and protect wastewater infrastructure.

CWSRF programs in each state and Puerto Rico operate like banks. Federal and state contributions are used to capitalize the programs. These assets are used to make low interest loans for important water quality projects. Funds are then repaid to the CWSRFs and are recycled to fund other water quality and public health projects.

Those interested in learning more about CWSRF funding opportunities should seek out the CWSRF program in their state and participate in the annual process that determines which projects are funded. The list of CWSRF state programs can be found on the website included in the summary table at the end of this section.

National Oceanic and Atmospheric Agency (NOAA) Coastal Resilience Grants Program

This competition represents the integration of two existing grant programs: The Coastal Ecosystem Resiliency Grants Program administered by NOAA Fisheries, and the Regional Coastal Resilience Grants Program administered by NOAA's National Ocean Service. The competition funds projects that build resilience, including activities that protect life and property, safeguard people and infrastructure, strengthen the economy, or conserve and restore coastal and marine resources.

The NOAA Coastal Resilience Grants Program supports two categories of activities: strengthening coastal communities and habitat restoration.

- **Strengthening Coastal Communities:** activities that improve capacity of multiple coastal jurisdictions (states, counties, municipalities, territories, and tribes) to prepare and plan for, absorb impacts of, recover from, and/or adapt to extreme weather events and climate-related hazards.
- **Habitat Restoration:** activities that restore habitat to strengthen the resilience of coastal ecosystems and decrease the vulnerability of coastal communities to extreme weather events and climate-related hazards.

Eligible applicants include nonprofit organizations, institutions of higher education, regional organizations, private entities, and local, state, and tribal governments. Projects in the District of Columbia are limited to the "habitat restoration" category. Typical award amounts will range from $250,000 to $1 million

for projects lasting up to three years. Cost-sharing through cash or in-kind contributions is expected. Projects must be located in one or more of the 35 U.S. coastal states or territories.

USDA Natural Resources Conservation Service (NRCS) Watershed Rehabilitation Program

NRCS is making $10.4 million available to help local project sponsors rehabilitate aging dams that protect lives, property and infrastructure, such as drinking water in rural communities downstream. Of this, $4.8 million will be used in Texas to complete the design and construction of four watershed rehabilitation projects in Ellis and Williamson counties, and $3.7 million will be used in Utah for the construction of a dam project in Utah County. About $500,000 will be used to assess up to 25 aging dams nationwide this year.

Local sponsors request funding assistance from NRCS when a potential rehabilitation project is identified. NRCS is committed to funding the planning, design, and construction of entire projects. NRCS selects projects based on recent rehabilitation investments and the risks to lives and property if a dam failure should occur.

FEMA Earthquake State Assistance Program

FEMA awards cooperative agreements to select states and territories with moderate to high seismic risks to fund one or more of the eligible activities listed below. The purpose is to support the establishment of earthquake-hazards-reduction programming, the implementation of earthquake safety, mitigation, and resilience activities at the local level.

- Develop seismic mitigation plans
- Prepare inventories and conduct seismic safety inspections of critical structures and lifelines
- Update building codes, zoning codes, and ordinances to enhance seismic safety
- Increase earthquake awareness and safety
- Encourage the development of local consortia for eligible purposes

The states and territories selected to participate in this program, their requirements under the program, and their funding allocations, are determined based on a combination of statutory and regulatory requirements, program priorities, available funding, and consideration of risk information gathered from the U.S. Geological Survey National Seismic Hazard Maps, the International Residential Code Seismic Design Categories, and HAZUS-MH Estimated Annualized Earthquake Losses for the United States (FEMA 366)[5]

Grants Management

Grants management relates to all of the administrative tasks required to handle the money, reporting, and program implementation in a way that meets generally accepted standards as well as the requirements of the funding source.

FEMA's Hazard Mitigation Technical Assistance program (HMTAP), provides nationwide mitigation, environmental, consulting and technical services funding. Various consulting firms provide resources to identify federal and state grants and technical assistance programs to implement hazard mitigation plans and effective grants management.

For any grant a community receives, grants management will be required. These grants will likely require meticulous record-keeping and reporting on how and what grant funds were spent.

Table 4.1 Summary of Federal Sources of Pre-Disaster Risk Reduction and Resilience Funding

Resource	Type of Assistance and Intent
Department of Agriculture National Resources Conservation Service For more information: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wr/	• Watershed Rehabilitation Program helps project sponsors rehabilitate aging dams that are reaching the end of their 50-year design lives • Rehabilitation addresses critical public health and safety concerns
Environmental Protection Agency (EPA) Clean Water State Revolving Fund For more information: https://www.epa.gov/sites/production/files/2016-11/documents/funding_resilient_infrastructure_with_the_clean_water_state_revolving_fund.pdf	• Low cost funding assistance to any public, private, or nonprofit entity for measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water
EPA Low Impact Development Green Infrastructure (LIDGI) Projects For more information: https://www.epa.gov/sites/production/files/2016-04/documents/epa-lid-gi_and_hma_final.pdf	• Supports projects to supplement localized or watershed flood protection • Reduces flood losses to properties insured under the NFIP (Funded under FEMA HMA program) • Requires an approved Hazard Mitigation Plan and membership in NFIP
FEMA Assistance to Firefighters Grants For more information: https://www.fema.gov/welcome-assistance-firefighters-grant-program	Provides funding through three different grants to: • Enhance a fire department's/safety organization's ability to protect the health and safety of firefighters and the public • Assist fire prevention programs and support firefighters' health and safety research; and development • Increase or maintain the number of trained "front line" firefighters available in communities
FEMA Earthquake Assistance Program For more information: https://www.fema.gov/earthquake-state-assistance-program	• Awards cooperative agreements to states and territories with moderate to high seismic risks • Supports establishment of earthquake-hazards-reduction programming and implementation of earthquake safety, mitigation, and resilience activities at the local level • Project approval and funding is based on a combination of statutory and regulatory requirements, program priorities, available funding, and consideration of risk information

Resource	Type of Assistance and Intent
FEMA Emergency Management Institute (EMI), National Emergency Training Center (NETC), Emmitsburg, MD For more information: https://training.fema.gov/emi.aspx	• Provides emergency management training to Federal, State, local, tribal, volunteer, public, and private sector officials and individuals to strengthen emergency management core competencies for professional, career-long training • Training delivery systems include on campus classroom instruction, independent study, and offsite delivery systems for emergency management personnel nationwide
FEMA Hazard Mitigation Assistance (HMA) For more information: https://www.fema.gov/media-library/assets/documents/103279	**Flood Mitigation Assistance Program (FMA)** • Provides grants for mitigation planning, projects and technical assistance, with a goal of reducing claims under the NFIP • State and Tribal Applicants are required to have an approved Hazard Mitigation Plan • No plan is required for subapplicants **Pre-Disaster Mitigation Program (PDM)** • Awards planning and project grants, and grants for public awareness activities • Funding is available for up to 75 percent of eligible activity costs and small, impoverished communities may be eligible for up to a 90 percent federal cost share • Eligible Applicants: States, U.S. Territories, federally-recognized Tribes o Local governments are eligible subapplicants and can sponsor applications on behalf of homeowners to submit to the Applicant • Project grants require an approved Hazard Mitigation Plan

Resource	Type of Assistance and Intent
FEMA Hazard Mitigation Technical Assistance Program (HMTAP) For more information: https://www.fema.gov/fema-technical-assistance-program	• Works with state, local, tribal, and territorial jurisdictions, federal departments and agencies, and whole community partners to provide technical assistance • In-person workshops to support implementing the National Preparedness System and opportunities for peer-to-peer learning • Technical assistance for emerging, cross-cutting, or complex topics. This delivery method may include the development of new tools, plans, and processes that are of benefit to jurisdictions nationwide • Assists jurisdictions by identifying guidance, training, and templates that jurisdictions can use to improve and maintain core capabilities • Hosts webinars to showcase state, local, tribal, and territorial achievement, lessons learned, and subject matter expertise on a range of relevant emergency management topics
Federal Housing Administration Mortgage Insured Financing For more information: https://www.fema.gov/safe-room-funding	• Allows borrowers to include windstorm shelters as an eligible work item for Federal Housing Administration (FHA) 203(k) rehabilitation loans and FHA 203(b) financed new construction • Shelters must be constructed consistent with the guidelines presented in FEMA P-320, Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business
Grants.gov Program Management Office For more information: https://www.grants.gov/web/grants/home.html	• Provides a common website for federal agencies to post discretionary funding opportunities, and for grantees to find and apply for eligible grants • Centralizes more than 1,000 different grant programs across federal grant-making agencies, providing improved search capacity, and using standardized grant information, application packages and processes for finding and applying for federal grants

Resource	Type of Assistance and Intent
National Flood Insurance Program (NFIP)/Community Rating System (CRS) For more information: https://www.fema.gov/community-rating-system	• Communities participating in the NFIP can join the CRS • Voluntary incentive program; communities whose floodplain management activities exceed the minimum NFIP requirements can reduce insurance premium rates for policyholders by up to 45% • Requires an approved Hazard Mitigation Plan
National Oceanic and Atmospheric Administration (NOAA) Coastal Resilience Grants Program For more information: https://www.coast.noaa.gov/resilience-grant/	• Competitive grants program for specified regional programs, institutions of higher education, nonprofit or for-profit organizations, a U.S. territory or state, Native American tribes, or local governments (including counties, municipalities, and cities) focused on: • Strengthening Coastal Communities • Habitat Restoration • Projects must benefit coastal communities in one or more of the 35 U.S. coastal states or territories
NOAA US Climate Resilience Tool Kit For more information: https://toolkit.climate.gov/content/funding-opportunities	• Site contains a range of government entities and private foundations offering financial and technical resources to advance local adaptation and mitigation efforts • Climate and Energy Resources for State, Local and Tribal Governments
US Fire Administration Funding Alternatives for Emergency Medical and Fire Services For more information: https://www.usfa.fema.gov/downloads/pdf/publications/fa_331.pdf	• Provides comprehensive information on private sector grants, local revenue and funding alternatives, and state and federal funding sources for local-level emergency medical services (EMS) agencies and fire departments • Includes information on writing effective grant proposals

Table 4.2 Other Potential Sources of Pre-Disaster Risk Reduction Funding

Additional funding options for pre-disaster risk reduction can be found through public/private partnerships, grants, and loans from non-government community stakeholders, local and national non-profits and faith-based groups, and philanthropic foundations.

Resource	Type of Assistance and Intent
Non-Profits For more information: https://www.habitat.org/impact/our-work/disaster-response/disaster-risk-reduction	These organizations use their surplus revenues to further achieve their purpose or mission, rather than distributing their surplus income as profit or dividends. Many non-profits earmark funding for disaster-related actions. **Example: Habitat for Humanity** has developed a number of methodologies to facilitate vulnerability assessment and risk management at the community level. • Habitat organizations have incorporated the implementation of this program methodology in vulnerable communities located in areas where disasters are "predictable." • The program assists community groups with risk assessment and identifying community projects that contribute to disaster mitigation and risk reduction. • The resulting plan is administered and maintained by an elected community task force and support is provided by Habitat to build organizational capacity.
Public / Private Partnerships For more information: https://www.fema.gov/public-private-partnership-models https://www.epa.gov/green-infrastructure/green-infrastructure-collaborative	States and other jurisdictions are actively entering into public-private partnerships to improve emergency management capabilities by leveraging existing resources and working towards a more resilient community. Local and national businesses, insurance companies, home builders, non-profits involved in sustainability, and others can be excellent partners. The link provides models of public-private partnerships, from hazard-specific models to city, county, regional, state, national, and international models. **Example: Green Infrastructure Collaborative** EPA and other federal agencies, nongovernmental organizations, and private-sector entities joined together to form the Green Infrastructure Collaborative, a network-based learning alliance that will build capacity for implementing green infrastructure practices.

Resource	Type of Assistance and Intent
Private Philanthropy / Foundations For more information: http://www.nycommunitytrust.org **http://www.cof.org/topic/disaster-grantmaking-0**	Foundations can often play an essential funding role in disaster relief and recovery. Additionally, foundations can leverage experience and expertise in response, recovery and long term rebuilding strategies and initiatives. **Example: New York Community Trust** The Trust's $100,000 grant to Regional Plan Association will help update flood and coastal resilience plans for the New York, New Jersey, and Connecticut region and identify communities and public infrastructure vulnerable to storms and rising sea levels. The American Red Cross Greater New York Region will use a $110,000 grant to help downstate nonprofits prepare for natural disasters.

Other Ways to Reduce Risk Pre-Disaster

Flood Insurance

The NFIP enables homeowners, business-owners, renters, and governments to purchase flood insurance coverage for financial protection of buildings and contents damaged by floods, mudslides or flood-related erosion. The program reduces federal disaster expenses and requires wise floodplain management practices.

Premium rates are generally lower than actuarial, risk-based rates. Current flood maps can be viewed on the FEMA Map Service Center website at: http://msc.fema.gov

Generally, physical damage to the building or personal property "directly" caused by a flood is covered by the flood insurance policy. For example, damages caused by a sewer backup are covered if the backup is a direct result of flooding. However, if the backup is caused by some other problem, the damages are not covered by flood insurance.

General guidance on items covered and not covered by flood insurance may be found at http://www.fema.gov/national-flood-insurance-program. The individual policy has the complete list.

The NFIP defines a flood as: "A general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area, or of two or more properties (at least one of which is the policyholder's property) from:

- Overflow of inland or tidal waters; or
- Unusual and rapid accumulation or runoff of surface waters from any source; or
- Mudflow; or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above."

https://www.fema.gov/pdf/nfip/manual201105/content/22_definitions.pdf

Teaming Floodplain Management, Hazard Mitigation, and Climate Adaptation

Another way of leveraging programs and resources to promote hazard mitigation and resilience is by unifying the work of floodplain managers, hazard-mitigation professionals and climate adaptation professionals. These groups have a lot in common, but institutional differences have hampered close cooperation. Until recently, most hazard mitigation efforts have been based upon past events, while adaptation work is typically informed by future projections.

For their part, floodplain managers have focused primarily upon flood hazards only. Uniting these groups can help create synergies. Many state and regional governments, realizing this problem, are beginning to unify floodplain management, hazard mitigation and climate adaptation.

Agreements for Post-Disaster Assistance and Services

There are several types of pre-disaster opportunities in which communities and their governing bodies can commit to assist each other in times of disasters. This may benefit the community's ability to take advantage of post-disaster opportunities for disaster resilient recovery, as well as support immediate response and recovery needs. Writing agreements ahead of time can significantly increase the effectiveness of emergency responders and increase the possibility of receiving funding from federal agencies for costs incurred in a disaster.

Mutual Aid Agreements

Mutual Aid and Assistance Agreements are contracts between agencies, organizations, and jurisdictions that provide a mechanism to quickly obtain emergency assistance in the event of a disaster. This assistance may be in the form of personnel, equipment, materials, and other associated services. The primary objective is to obtain additional manpower and resources and to facilitate rapid, short-term, deployment of emergency support prior to, during, and after a disaster. Assistance from other mitigation or floodplain administrators would be valuable in conducting a "Hazard Mitigation Preliminary Damage Assessment" to identify patterns of damage that may initiate revised thinking about the priorities in the existing hazard mitigation strategy.

Memorandums of Understanding

Memorandums of Understanding (MOUs) between jurisdictions are, essentially, governments helping governments. For instance, a school district may have an agreement to use another district's school buses in case of disaster, or an electric co-op may use another provider's repair crews to help restore power to its customers. These types of agreements are crucial to maintaining order and continuing services when disaster strikes, but they must be in place pre-disaster.

Contracts

Contracts should be in place pre-disaster for certain services, such as debris hauling, mosquito spraying, and other services needed in the period immediately after a disaster.

Why is this important? After a disaster, emergency managers are under immense pressure to know where to direct first responders, often to multiple damaged areas. This is not the time to find out whether other jurisdictions or agencies can provide assistance. Also, to obtain FEMA Public Assistance, an applicant (local governmental unit or eligible non- profit) must go through an open bidding process. This is difficult to do after a disaster, especially if the disaster shuts down your electricity or floods your local government offices.

For best results identify the contractors or companies you will use for each response function before a disaster. Then, when disaster strikes, the contract is triggered. This saves time and reduces post-disaster chaos. It also demonstrates to FEMA that the contract was awarded through a competitive bidding process

While common pre-disaster contracts are for debris removal, if a community has significant development in flood hazard areas it should also consider a standing agreement with a contractor to assist local officials to collect data needed to notify residents or businesses if their structures are substantially damaged, and must meet specific rebuilding requirements.

Summary

The journey to disaster resilience requires communities implement as much of the hazard mitigation strategy as possible before disaster strikes. The amount and type of resources needed to do so depend on what is in the strategy, and finding those resources must be a shared responsibility. Perhaps the DRR Ambassadors can contribute most by keeping community officials focused on development and codes. There are many other sources of funding and assistance as well. Chapter 4 has focused on providing a summary of resources and tactics communities can use to move forward with disaster risk reduction initiatives.

Case Example of Successful Pre-Disaster Planning

Flood Insurance and Mitigation Saves Taxpayer Dollars for Tidewater and Poquoson

The southeastern areas of the Commonwealth of Virginia suffered extensive flooding of up to 18 inches of rain from severe storms associated with Tropical Depression Ida and a Nor'easter. The damaging effects of the storm began on November 11, 2009. The Governor requested a major presidential declaration for Public Assistance for five counties and seven cities; on December 9, the President declared a major disaster for the affected communities. The Virginia Department of Emergency Management (VDEM) reported that "although there were significant impacts on individuals and businesses as a result of the storm, the Preliminary Damage Assessment (PDA) process determined that there was a very high level of insurance in the areas affected, which would preclude the need for an Individual Assistance declaration."

It was determined that approximately 80 percent of the damage was covered by flood insurance. This spared taxpayers the expense of additional federal disaster assistance through FEMAs Individual Assistance program. The large number of flood insurance policies in force was very important, because according to the Virginia Department of Conservation and Recreation (DCR), Floodplain Management Division, "Damage from flooding since the 1950s indicates that Virginia experiences more than $400 million in damages each decade." Matthew Wall, Hazard Mitigation Program Manager for VDEM, states, "Homeowners were aware of the hazard, what it can do, and have taken the appropriate steps of acquiring and maintaining flood insurance." In the Tidewater, Hampton Roads areas of southeastern Virginia, which were damaged by the November 2009 severe weather, there was an average increase of approximately 45 percent in the number of flood insurance policies in force between Hurricane Isabel (2003) to Tropical Depression Ida and the Nor'easter in 2009.

This increase reflects the ultimate goal of hazard mitigation: A flood occurred, private property was damaged, and taxpayer dollars were not needed to support their recovery efforts because the property was adequately insured. Another important factor was incorporating freeboard requirements into a community's regulations. Freeboard is an additional amount of height above the Base Flood Elevation BFE, i.e., the elevation of 100-year flood event that has a one-percent-annual-chance of occurring in any given year. It is used as a factor of safety (e.g., two feet above the base flood elevation) in determining the level at which a structure's lowest floor must be elevated or floodproofed to be in accordance with the Commonwealth or community floodplain management regulations. Freeboard reduces flood damage and results in significantly lower flood insurance rates due to lower flood risk. Alison Meehan, Floodplain Program Planner for the Virginia DCR, said, "The requirement by most of the affected communities to include freeboard into their floodplain ordinance as a factor of safety is responsible floodplain management and, therefore, an important ingredient in reducing the damage caused by this November flooding."

Freeboard is not required by the National Flood Insurance Program (NFIP) standards, but communities are encouraged to adopt at least a one-foot freeboard to account for the one-foot rise built into the concept of designating a floodway, the encroachment requirements where floodways have not been designated, and other uncertainties in predicting 100-year flood event levels. Studies show that the

additional costs of adding freeboard at the time of construction are small, and return benefits in excess of the costs.

Some homeowners who suffered damage during the November 2009 storms did not have flood insurance. They had not purchased it because their property was not located in the floodplain and they did not believe that their property was vulnerable to flooding. FEMA statistics reveal, however, that approximately 25 percent of all flood insurance claims come from areas with low-to-moderate flood risk. This figure represents a large number of homes that are not required to carry flood insurance, but where there is still a risk of flood damage.

Various hazard mitigation projects enacted also precluded the need for FEMA Individual Assistance and lessened the disaster impact on people and property in the Commonwealth. These projects involve elevation of floodprone structures, acquisition of real property, and the development of better storm water drainage. These were all funded through several different federal, commonwealth, community, and private resources. In the southeast area of Virginia, FEMA's Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), and the Repetitive Flood Claims (RFC) Programs funded over 150 home elevation projects and over 120 property acquisition projects. An additional 100 elevation and acquisition projects have been funded and/or partially completed. Program funding and guidelines vary by program. www.fema.gov/government/grant/hma/index.shtm

Chapter 4 References

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5 What Happens When a Disaster Strikes?

Recovering and Getting Back on the Road to Disaster Resilience

A community that has developed a roadmap toward disaster resilience is aware that a disaster event is inevitable. Nonetheless, when it does occur, a disaster will impact not only the everyday life of the community but any ongoing efforts to implement the hazard mitigation plan and other disaster risk reduction initiatives.

During this difficult time DRR Ambassadors must concentrate on opportunities to properly plan for and mitigate *future* hazards, rather than focusing on quickly rebuilding so as to return to "the way things were." Quick and irresponsible decision-making that merely builds things back to their original, pre-disaster state only serves to perpetuate current risks. Remember, the post-disaster "window of opportunity" lasts a relatively short period of time… residents and business owners will exert pressure on their elected officials to let them return to normal living by quickly cleaning and rebuilding their homes and businesses.

Properly channeled, opportunities after a disaster to create greater resilience are only limited by the imagination and perseverance of the community. Not all hazard mitigation solutions have to be million-dollar solutions.

Improved codes and standards, pre-arranged agreements and local collaboration are important tools that can be used for hazard mitigation. Speed of recovery is not always effective in building a more resilient community. Taking time and doing proper, deliberate planning is more important. Involvement of the "Whole Community" as defined by FEMA and all stakeholder groups, including underserved populations, is essential to long-term recovery.

Accomplishing this in the wake of a community tragedy may seem to be little more than a nice philosophical concept that can lose credibility in reality. Pressure to rebuild quickly may limit the opportunities for massive mitigation planning, but it should be possible to introduce and convey the need to build back better, and stronger. Doing so will actually aid in the recovery and establish a "new normal" post disaster, and boost the economy by preventing future economic loss due to disaster damage. The "10 Ps" of Disaster Recovery, located at the end of this chapter, are good reminders of what to expect and how to stay on the path to resilience.

This chapter covers the process that triggers a Presidential Disaster Declaration (PDD), and provides an overview of the resources, roles, and responsibilities that flow from a PDD.

This chapter explains how stakeholders can reassess their disaster resilient destination in light of the disaster event, identify new opportunities for technical, financial and other resources, determine what makes sense, and adjust the route as necessary.

Presidential Disaster Declaration

Community leaders and DRR Ambassadors are better positioned to begin the process of disaster resilient recovery with a basic understanding of the Presidential disaster declaration process, the assistance a PDD makes available to communities and individuals, and the opportunities for mitigating the community's future risks.

Governing Authorities

The original Disaster Relief Act of 1974 was amended in 1988 by the Robert T. Stafford Disaster Relief and Emergency Assistance Act[1] to expand and improve upon the assistance available, and to define the responsibilities of states and localities in requesting and expending federal disaster assistance. The Stafford Act specifically lays out the provisions for Presidential disaster declarations, the scope of assistance available from the federal government, and the conditions for obtaining that assistance.

The **Post-Katrina Emergency Management Reform Act of 2006 (PKEMRA)** provided FEMA substantial new authority to remedy gaps in response and recovery, and included a more robust preparedness mission for FEMA.

The Sandy Recovery Improvement Act of 2013 (SRIA) further amended the Stafford Act. Among other changes it streamlines and advances assistance available under the Hazard Mitigation Grant Program, which will be explained later in this chapter.

The Code of Federal Regulations, Title 44 (44 CFR)[2] contains the codified U.S. Federal laws and regulations that are in effect pertaining to Federal emergency management and assistance, including insurance and hazard mitigation, fire prevention and control, disaster assistance, and emergency preparedness.

The PDD Process

A PDD is requested when a disaster is of such severity and magnitude that a lower level of government (state, tribe, or local government) would not be capable of responding effectively without access to the greater resources of the federal government. Two basic types of Presidential declarations are available: emergency declarations and major disaster declarations.

Emergency Declaration

Under the Stafford Act, an Emergency is any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect public health, safety, and property. Thus, it is a limited-scope declaration with a maximum of $5 million in available assistance, and it does not provide assistance for permanent repairs, building or facility replacement, or, in most cases, housing assistance.

Under an emergency declaration, no damage assessments are required or warranted, as no permanent work or housing assistance is authorized. The Hazard Mitigation Grant Program (HMGP) is not authorized under an emergency request.

Major Disaster Declaration

When a major disaster event takes place, a state or tribal government activates its emergency plan and usually will issue a state of emergency. Immediately following impact, local government officials conduct initial damage assessments and forward them to state or tribal emergency management officials for review and validation. If a determination is made that the impacts of an event appear to be eligible for federal assistance, the Governor of the State or the Tribal Chief Executive contacts the appropriate FEMA Regional Office and requests that a joint Preliminary Damage Assessment (JPDA) be conducted by federal, state/tribal, and where possible, local, government representatives and other relevant response and recovery partners.

The purpose of the JPDA is to verify and consolidate information about the nature and extent of the disaster's impacts, including costs, in order to determine whether responding to and recovering from the disaster is beyond the capability of local and State authorities.

Strategically for disaster risk reduction objectives, Disaster Risk Reduction Ambassadors can encourage or assist the local community to simultaneously document conditions that will inform potential mitigation efforts later, such as:

- Damage to public buildings and infrastructure
- Patterns of structural damage
- Whole neighborhoods or business districts significantly damaged
- Flood depths
- Repetitive losses
- Performance of risk reduction measures

This is a prime opportunity to collect or request data and identify opportunities to implement risk reduction measures already in the local hazard mitigation plan mitigation strategy, or to realize that the risk assessment needs to be re-evaluated. If not available in the community, state and/or federal agencies may be able to provide geospatial damage assessments and other GIS products that capture this information.

Types of assistance available under a major disaster declaration include the following.

Individual Assistance (IA)[3] to individuals and households under Section 408 of the Stafford Act:

- Individuals and Households Program
- Crisis Counseling Program
- Disaster Case Management
- Disaster Unemployment Assistance
- Disaster Legal Services
- Disaster Supplemental Nutrition Assistance Program

Public Assistance (PA)[4] under Section 406 of the Stafford Act

Categories A-G – Assistance to State, Tribal, and local governments and certain private nonprofit organizations for emergency work and the repair or replacement of disaster-damaged facilities, which may include the following Categories:

- A – Debris removal
- B – Emergency protective measures
- C – Roads and bridges
- D – Water control facilities
- E – Buildings and equipment

- F – Utilities
- G – Parks, recreational, and other facilities

Hazard Mitigation Grant Program (discussed in the next section) under Section 404 of the Stafford Act

Primary Post-Disaster Funding to Support Risk Reduction

Hazard Mitigation Grant Program

As discussed in Chapter 4, FEMA's Hazard Mitigation Assistance (HMA) grant programs provide funding for eligible mitigation activities. The Flood Mitigation Assistance (FMA) Program and the Pre-Disaster Mitigation (PDM) Program are available without a PDD and are discussed in Chapter 4.

HMGP provides grants to states, local governments, and Indian tribes for long-term hazard mitigation projects after a major disaster declaration. The purpose of the program is to reduce the loss of life and property in future disasters by funding mitigation measures during the recovery phase of a natural disaster.

Examples of eligible mitigation activities include:

Examples of Eligible Mitigation Activities
Building Code Activities Post-disaster building code related activities that support building code officials during the reconstruction process.
Dry Floodproofing Floodproofing mitigation measures to make a structure temporarily watertight (e.g. shields, watertight doors); this includes stormwater, flood protection, and stabilization projects.
Elevation Through this measure the structure is rebuilt with a higher first floor. The crawl space is equipped with adequate vents per FEMA regulations. This allows floodwater to flow under the house rather than through it. Businesses have the option to flood-proof the area below the finished floor; however, the structure must be engineered to withstand hydraulic and hydrostatic forces.

Examples of Eligible Mitigation Activities
Minor Localized Flood Reduction Local measures intended to lessen the frequency or severity of flooding and flood damages.
Property Acquisition and Demolition (Buyouts) This is the most permanent form of mitigation for flood risk property. The community purchases and clears the property. Thereafter the property is maintained as public open space. This process is strictly voluntary.
Safe Room An interior room, a space within a building, or an entirely separate building, designed and constructed to provide near absolute life-safety protection from tornadoes and severe weather; to be eligible the safe room must meet FEMA compliance requirements.
Other Retrofitting Strengthening buildings to minimize damage from high winds, flooding, earthquakes, and other hazards, for example roof reinforcement, hurricane straps, wind-resistant glass, and tie-downs. FEMA and other organizations have worked to develop model code requirements and building guides to aid in the process.
Relocation Flood-prone structures may be moved to areas outside of the Special Flood Hazard Area (SFHA) if the structure can be safely moved. The owner receives support to acquire the new lot, build the necessary foundation, unhook utilities, transport the structure, and reconnect utilities. The abandoned property is deeded as perpetual open space owned and maintained by the sponsoring local government.

Although funding for the program is federal, it is administered by the states. It is funded through allocations of 15 percent of eligible federal disaster recovery expenditures obligated within 12 months of the presidential disaster declaration, to states with current approved standard Hazard Mitigation Plans.

States with approved Enhanced Hazard Mitigation Plans receive 20 percent allocations with funding caps for extreme, catastrophic disasters. The Enhanced Plan must demonstrate the State has developed a comprehensive mitigation program; it effectively uses available mitigation funding, and is capable of managing the increased funding. In order for the State eligibility for the 20 percent HMGP funding, FEMA must have approved the plan within 5 years prior to the disaster declaration.

Immediately following the disaster, FEMA and the state mitigation program establish mitigation priorities for the state to implement projects, as well as support other innovative mitigation efforts to support community recovery. This is set forth in a disaster-specific mitigation strategy that details program priorities, application procedures, and timelines.

Local jurisdictions can select projects that could reduce property vulnerability. The local government or sponsoring jurisdiction should use its approved hazard mitigation plan goals and strategies to guide projects.

If the community does not have an approved plan, a FEMA Regional Coordinator can allow a plan to be developed at the same time as the development of an application, as long as the plan is developed, approved, and adopted within one year of the declaration date.

FEMA will pay up to 75 percent of the project cost.

- Either the state, local-government sub-applicants, or individual property owners must provide the remaining 25 percent match.
- In-kind services and materials can qualify for the 25 percent match, as can other sources of funding in certain cases, such as Community Development Block Grants through the Department of Housing and Urban Development.

Using in-kind services can make it much easier for a community to undertake mitigation projects. These can include staff time and the use of equipment already owned by the jurisdiction.

Additional information can be found on FEMA Hazard Mitigation Assistance[5] website.

Public Assistance (PA) Program – Section 406 Mitigation

The Public Assistance (PA) program provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities of certain Private Non-Profit (PNP) organizations.

The PA program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. This is often referred to as '406 Mitigation' as it is authorized under Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).

Section 406 **provides discretionary authority to fund mitigation measures** in conjunction with the repair of the disaster-damaged facilities.

- These opportunities usually present themselves during the repair efforts.
- The mitigation measures must be related to eligible disaster-related damages and must directly reduce the potential for future, similar disaster damages to the eligible facility.
- The work is performed on the parts of the facility were actually damaged by the disaster and the mitigation measure provides protection from subsequent events.
- Mitigation measures must be cost-effective, technically feasible, and in compliance with statutory, regulatory and executive order requirements.
- The measure cannot cause a negative impact to the facility's operation, surrounding areas, or susceptibility to damage from another hazard.

Section 406 hazard mitigation funding and Section 404 Hazard Mitigation Grant Program (HMGP) funding are two distinct programs that can sometimes be used together to more completely fund a hazard mitigation project and promote resilience. The 404 program does not necessarily apply to damaged facilities resulting from the current declared disaster. It focuses, rather, on repetitive damages from past disasters and funds new or improved facilities.

The State receives a percentage of the PA program declared disaster damage amount, which it uses to fund projects anywhere in the state, regardless of where the declared disaster occurred or the disaster type. In combining Section 406 and Section 404 hazard mitigation funding:

- Section 406 Mitigation funds can be used to restore parts of the facility actually damaged by the disaster to provide protection from subsequent events. Section 404 funding can then be used to provide future protection to the undamaged parts of the facility.

Leveraging 404 and 406 funds in a concerted effort facilitates project scoping and development while extending the use of limited 404 funds.

Some examples would be:

- Replacing a bridge with a low-water crossing
- Burying power lines
- Installing gabion baskets, riprap, and/or geotextile fabric to control erosion
- Seismic retrofit of a public high school using HMGP funds
- Upgraded culverts using HMGP

The mitigation measure does not have to mitigate the same type of damage that was caused by the disaster and does not have to be for the same type of disaster.

Additionally, Alternate Project Funds may be used across all permanent work categories, for example:

- Upgrading a substandard undamaged road that is subject to repeated flooding, in order to better serve the general public and reduce the repetitive flood damage.
- Upgrading a facility to mitigate future disaster damage whether or not the facility was damaged by the event. Upgrades might range from something as simple as hurricane clips or bracing, to a large project.
- Relocating, as a mitigation measure, undamaged facilities such as roads and utilities that are subject to repetitive damage.
- Demolishing an outdated maintenance building (non-emergency work) and using the funds to construct a new water treatment plant at the same location.
- Abandoning a county bridge and using the funds to build a new county maintenance shop.
- Increasing the capacity of a new building; for example, adding a wing to an existing building being repaired.
- Using funds eligible to repair a transportation administration building to acquire and renovate a building to serve as a school for the arts.
- Purchasing pieces of equipment (such as scientific equipment, telecommunications switches, fire trucks, vehicles, etc.) that exceed $5,000 per unit, and have a useful life of a year or more.

Additional information can be found on FEMA's Section 406 Hazard Mitigation Funding[6] website.

National Flood Insurance Program, Increased Cost of Compliance Coverage

Communities that belong to the National Flood Insurance Program may have an additional resource to reduce future flood risks following a flood event.

If eligible, National Flood Insurance Program (NFIP) policyholders may receive up to $30,000 of Increased Cost of Compliance (ICC) coverage to help pay the costs to bring their building into compliance with their community's floodplain ordinance. The coverage availability and payment limits are subject to the terms of the Standard Flood Insurance Policy (SFIP) and maximum coverage limits, including all applicable NFIP rules and regulations.

Policy holders are eligible to file a claim for ICC coverage if the community determines their home or business is damaged by flood to the point that repairs will cost 50 percent or more of the building's pre-damage market value (called substantial damage):

- When the community determines that a building is "substantially damaged," wherein the cost to repair or improve the structure exceeds its market value by a threshold amount adopted by law or ordinance. Community building officials are responsible for the issuance of substantial damage declarations.
- When the community has a "repetitive loss" provision in its floodplain management ordinance and determines the building was damaged by a flood two times in the past 10 years, where the cost of repairing the flood damage, on average, equaled or exceeded 25 percent of its market value at the time of each flood.

ICC options for meeting the local requirement for building in a NFIP-designated Special Flood Hazard Area:

- Elevation –raising a home or business to or above the flood elevation level adopted by your community.
- Relocation – moving a home or business out of harm's way.
- Demolition – tearing down and removing flood-damaged buildings.
- Floodproofing – this option is available primarily for non-residential buildings. It involves making a building watertight through a combination of adjustments or additions of features to the building that reduces the potential for flood damage.

The $30,000 coverage amount may not be enough to pay for these mitigation measures. Because ICC payments are not federal grants, but rather part of the flood insurance policy, the money may be used for matching funds required for a Hazard Mitigation Assistance grant. Residents may pool their ICC payments to achieve their own mitigation and contribute to the overall risk reduction efforts of the community.

For more information, go to https://www.fema.gov/increased-cost-compliance-coverage

Substantial Damage Determinations

SUBSTANTIAL DAMAGE is damage of any origin sustained by a structure whereby the cost of restoring the structure to its pre-damage condition would equal or exceed 50% of the market value of the structure before the damage occurred.

A community participating in the National Flood Insurance Program (NFIP) is responsible for enforcing the substantial damage requirements of the NFIP. This may be an overwhelming responsibility for a community with extensive flood damage and few resources with which to assess damage and perform substantial damage determination. The State and/or FEMA can provide technical assistance to the community to perform these responsibilities, usually using FEMA's Substantial Damage Estimator tool. Requests can be made through the State NFIP Coordinator.

The requirement to comply with the substantial damage requirement can also be confusing and unpopular with residents. Local officials and Disaster Risk Reduction Ambassadors need to get the word out quickly so that residents with substantially damaged homes or businesses do not begin to rebuild in violation of the current building code or local floodplain management ordinance.

A form taken from FEMA's ***Hazard Mitigation Field Operations Guide for Floodplain Management and Insurance*** is included as a potential resource for local officials.

SUBSTANTIAL IMPROVEMENT OR SUBSTANTIAL DAMAGE
NOTICE TO PROPERTY OWNERS
Rebuilding your home after the storm?
Adding on, renovating, or remodeling your home?
Here's information you need to know about the 50% Rule.

If your home or business is below the Base (100-year) Flood Elevation (BFE), your **{insert community's name and County's name}** flood damage prevention regulations may affect how you repair, remodel, renovate, or add on to your home or business. If your home or business sustained structural and/or interior damage, these regulations may affect how you rebuild. The National Flood Insurance Program (NFIP) requires these laws that are aimed to protect your lives and investment from future flood damages. Your community must adopt and enforce these laws in order for federally-backed flood insurance to be made available to community residents and property owners.

Save yourself time, aggravation and money. Please read the following information.

SUBSTANTIAL DAMAGE means damage of any origin sustained by a structure whereby the cost of restoring the structure to its pre-damage condition would equal or exceed 50% of the market value of the structure before the damage occurred. (*Note: The cost of the repairs must include all restoration costs necessary to repair the structure to its before damage condition.)*

SUBSTANTIAL IMPROVEMENT means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the "start of construction" of the improvement.

If a building is "substantially damaged" or "substantially improved", it must be brought into compliance with the _____ flood damage prevention regulations, including elevating the building to or above the BFE.

The **{community's name}**, being a participant in the National Flood Insurance Program, has the responsibility to determine "substantial damage" and "substantial improvement" and has implemented the following procedures to comply with the NFIP regulations:

We will use the assessed value of your structure (excluding the land) recorded by the Property Appraiser's Office. If you disagree with the Property Appraiser's valuation of the structure, you may engage a licensed property appraiser to submit a property appraisal for the total market value determination.

You must obtain and submit to the **{community's floodplain manager}** a detailed and complete cost estimate for the addition, remodeling, reconstruction or for repair of all the damages sustained by your home, prepared and signed by a **{State- licensed}** contractor. The contractor must sign an affidavit indicating that the cost estimate submitted includes all damages or all improvements to your home, not just structural. The signed contract document must be submitted. If the owner is the contractor, the owner is responsible for submitting the cost estimate, and providing documentation, including subcontractor bids to document the cost estimate.

We will evaluate the cost of improvements and/or repairs and determine if they are fair and reasonable. For damage repairs, pre-storm prices and rates will be utilized. The cost of improvements or repairs does not include items not considered a permanent part of the structure *(i.e. plans, surveys, permits, sidewalks, pools, screens, sheds, gazebos, fences).*

SUBSTANTIAL IMPROVEMENT OR SUBSTANTIAL DAMAGE
NOTICE TO PROPERTY OWNERS
(Continued)

If your home is determined to have "substantial damage" or is proposed to be "substantially improved," an Elevation Certificate must be submitted to the **{community's floodplain manager}** to determine the lowest floor elevation (LFE). Attached garages (with adequate flood openings) and open carports are not considered to be the "lowest floor," provided they are solely used for parking of vehicles, storage, and building access.

If the lowest floor is below the BFE, the building must be elevated to or above that level plus community's freeboard. Likewise, all electrical and mechanical equipment (heating and cooling, etc.), bathrooms, and laundry rooms must be elevated to or above the BFE. Only parking, building access and limited, incidental storage is allowed for use in flood prone enclosures.

Non-residential buildings may be "flood-proofed" instead of being elevated. If the lowest floor, electrical, plumbing, and mechanical equipment are already above the BFE plus community's freeboard, the building can be repaired and reconstructed without having to comply with the 50% Rule.

Building plans must be prepared to show how the building is to be elevated or otherwise brought into compliance. If the building is to be flood-proofed, these plans must be prepared and certified by a registered professional engineer or architect. Certificates for this purpose are available at the FEMA website: FEMA.gov. A maintenance and operational plan will be necessary for demonstrating continued viability of floodproofing measures.

Following a presidential disaster declaration, the Small Business Administration may make loans available for both house and businesses for purposes of elevating the structure to or above the BFE plus community's freeboard. Proof of "substantial damage" from the **{community}** is required. Donated and Discounted Materials:
The value placed on materials should be equal to the actual or estimated cost of all materials to be used. Where materials or servicing equipment are donated or discounted below normal market values, the value should be adjusted to an amount equivalent to that estimated through normal market transactions.

Self and Volunteer Labor:
The value placed on such labor should be equal to the actual or estimated labor charge for repairs of all damages sustained by the structure. Where non-reimbursed (volunteer) labor is involved, the value of the labor should be estimated based on applicable minimum hourly wage scales for the type of construction work to be completed. The building official, based on his/her professional judgment and knowledge of local and regional wage scales can provide additional guidance to determine reasonable labor rates for professional trades (i.e., electricians, plumbers, block masons, framing, HVAC).

Compilation of Post Disaster Resources

The effects of disaster are overwhelming no matter how well prepared a community may be. Pre-disaster planning does not alleviate the loss and destruction that has occurred; however, it provides communities with a path forward. As immediate community needs are addressed, response and recovery efforts can also focus on the mitigation actions that can reduce the effects of any future disaster and lead to more resilient recovery.

The resources referenced in this chapter represent those available in the wake of a disaster that may be used to fund risk reduction measures from the community's approved local mitigation plan. Programs available for risk reduction activities without a PDD were described in Chapter 4. Those programs may be appropriate to supplement initiatives that cannot be completed using post disaster assistance only.

Table 5.1 Summary of Federal Sources of Post-Disaster Risk Reduction and Resilience Funding

Resource	Type of Post-Disaster Assistance and Intent
Department of Agriculture Programs For more information: https://www.usda.gov/topics/rural/housing-assistance	• Section 504 Repair Loans and Grants: Grants and direct loans to very-low-income rural residents for the rehabilitation and repair of owner-occupied dwellings, including removal of health and safety hazards and creation of accessibility for disabled persons. Eligible to people 62 and older who cannot afford to repay a loan. • Self-Help Housing Loans: Loans for materials, site, and skilled labor to assist groups of six to eight low-income families build each other's homes. Applicants must be a private or public nonprofit organization that will provide the developed sites to qualified borrowers on a cost-of-development basis in open country and towns with populations of 10,000 people or fewer. • Rural Rental Loans: Guaranteed and insured loans to build or rehabilitate rental units for low and moderate-income residents in rural areas. Applicants must be lenders that are approved by Fannie Mae, Freddie Mac, HUD, or State housing finance agency. • Section 502 Single-Family Housing Direct and Guaranteed Loans: Subsidized direct loans to very-low and low-income rural residents and guaranteed loans to low and moderate-income rural residents in need of housing. Existing borrowers are offered loan forbearance, when needed, to recover from the effects of a natural disaster.

Resource	Type of Post-Disaster Assistance and Intent
Department of Energy For more information: https://energy.gov/eere/services/technical-assistance	• Technical Assistance Programs: DOE's Weatherization Assistance Program, Affordable Housing Partnerships, Building America, and Office of Building Technology State and Community Programs provide services to communities for the revitalization of single-family, multifamily, and commercial buildings.
FEMA Fire Management Assistance Grant Program For more information: https://www.fema.gov/fire-management-assistance-grant-program	• Available to States, local and tribal governments, for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster. • Declaration process is initiated when a State submits a request for assistance to the FEMA Regional Director at the time a "threat of major disaster" exists; the entire process is accomplished on an expedited basis and a FEMA decision is rendered in a matter of hours. • State must demonstrate that total eligible costs for the declared fire meet or exceed either the individual fire cost threshold - which is applies to single fires, or the cumulative fire cost threshold, which recognizes numerous smaller fires burning throughout a state.
FEMA Hazard Mitigation Grants Program (HMGP) For more information: https://www.fema.gov/hazard-mitigation-grant-program	• Hazard Mitigation Grant Program funding is available, when authorized under a Presidential major disaster declaration, in the areas of the State requested by the Governor. At the State's request, HMGP may also be available statewide • Provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration • Enables mitigation measures to be implemented during the immediate recovery from a disaster • For communities without FEMA-approved hazard mitigation plans, the program also provides funding to help develop plans • State is applicant, local jurisdiction is subapplicant; an approved Hazard Mitigation Plan is required of both Applicants and sub-Applicants

Resource	Type of Post-Disaster Assistance and Intent
FEMA Historic Preservation and Cultural Resources Program (Public Assistance) For more information: https://www.fema.gov/office-environmental-planning-and-historic-preservation https://www.fema.gov/media-library/assets/documents/5714 https://www.fema.gov/environmental-historic-preservation/resources-environmental-and-historic-preservation-practitioners	FEMA deploys historic preservation specialists to affected areas following Presidentially declared disasters. These specialists identify historic preservation issues, assess damages, provide technical assistance, and fulfill FEMA's legal responsibilities for Section 106 compliance under various historic preservation laws, executive orders, and regulations. • Disaster assistance programs include grant funding for repair, restoration, or replacement of damaged, eligible publicly owned and private non-profit facilities to include historic properties. • Section 106 of the National Historic Preservation Act requires FEMA to adequately consider the effects of its funding on properties listed or eligible for listing on the National Register of Historic Places. • Program includes funding for the restoration of collections and items of "exceptionally significant cultural value" located within or on public or private non-profit property; historic properties are typically 50 years or older and include buildings, structures, sites, objects, and districts. • FEMA's EHP experts provide specialized guidance and practical long-term planning assistance to communities across the county to ensure that proposed projects align with environmental planning and preservation requirements. • PA program includes funding for the restoration of collections and items of "exceptionally significant cultural value" located within or on public or private non-profit property.

Resource	Type of Post-Disaster Assistance and Intent
FEMA Individuals and Households Program For more information: https://www.fema.gov/media-library/assets/documents/124228	In addition to temporary relief for displaced persons this program allow for individuals and families to mitigate as well as repair • Housing Assistance (Financial) • Provides financial and direct assistance for disaster-caused housing needs not covered by insurance or provided by any other source; refers to funds provided to eligible applicants for temporary lodging expenses, rental of temporary housing, or repair or replacement of a damaged primary residence • Housing Assistance (Direct) • Direct Temporary Housing Assistance (includes providing Temporary Housing Units or funds to rent a place to live) and, very infrequently, Permanent Housing Construction (PHC) • Other Needs Assistance (ONA) o SBA-dependent ONA - the applicant must first apply to the SBA for a loan for personal property, moving and storage, transportation assistance or serious needs. • Applicants must meet citizenship/residency requirements; their insurance or other assistance cannot meet their needs, and their expenses and serious needs are directly caused by a declared disaster
FEMA Public Assistance (PA) Program: Local, State, Tribal and Private Non-Profits For more information: https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit	406 Mitigation • During the repair, replacement, or restoration of disaster-damaged publicly owned facilities, and the facilities of certain private non-profit organizations, PA encourages and provides funding for protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process • The Applicant, facility, type of work, and project cost must each meet the specified project eligibility requirements • For categories C through G (e.g., repairs to damaged infrastructure, publicly owned buildings) Applicants must have an approved Hazard Mitigation Plan
FEMA Tornado Safe Room and Shelter Programs For more information: https://www.fema.gov/safe-room-funding	Funding for the construction of safe rooms and community shelters is available post disaster through the Hazard Mitigation Grant Program and pre-disaster through programs described in Chapter 4. • HUD Community Development Block Grant Funds (CDBG) • FEMA Pre-Disaster Mitigation Program Funds (PDM) • FHA Mortgage Insured Financing

Resource	Type of Post-Disaster Assistance and Intent
Housing and Urban Development (HUD) Disaster-Related Programs For more information: https://portal.hud.gov/hudportal/HUD?src=/info/disasterresources	Community Development Block Grant (CDBG) Program Disaster Recovery grants to rebuild areas affected by disasters, which provision crucial seed money to start the recovery process. • Provides grants to develop decent housing, a suitable living environment, and to expand economic opportunities, principally for persons of low- and moderate-income and help communities and neighborhoods that otherwise might not recover due to limited resources. • Helps communities and neighborhoods that otherwise might not recover due to limited resources. • CDBG grantees may reprogram their funds to assist homeowners declined by SBA because they cannot carry more debt or lack the ability to repay; beyond SBA's loan limits to repair, rehabilitate, reconstruct, or replace their residences. https://www.hudexchange.info/programs/cdbg-dr/ Partnership for Advancing Technology in Housing (PATH) • Designs and constructs examples of housing that includes disaster mitigation measures and technology that enhances energy efficiency, environmental performance, and affordability. https://www.huduser.gov/portal/research/path.html Title I Home Repair Loan Program • Finances loans up to $25,000 through participating lenders at prevailing interest rates. Section 203(k) Rehabilitation Mortgage Insurance Program • Assistance facilitating the finance of repairs or rehabilitation through participating lenders at prevailing interest rates. For disaster areas, HUD has expanded the debt ratio to 60 percent. Rehabilitation cost must be at least $5,000. Section 203(h) Mortgage Insurance for Disaster Victims • Mortgage insurance to protect lenders against the risk of default on loans to qualified disaster victims whose homes were destroyed or damaged. Disaster victims are not required to meet the 3 percent minimum investment requirement.

Resource	Type of Post-Disaster Assistance and Intent
Housing and Urban Development (HUD) Disaster-Related Programs (cont'd)	HOME Program • Participating jurisdictions may reprogram funds to provide permanent housing for low-income homeowners and renters who have become disaster victims. https://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/programs/home 5-H Homeownership Program • Public housing sales proceeds (and interest earned on those proceeds) may be retained by the Public Housing Administration and be used for housing assistance to low-income families https://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/sfh/title/ti_abou

Table 5.2 Sources of Guidance and Additional Information on Important Aspects of Post-Disaster Recovery

The following documents provide communities with additional guidance and information on important aspects of post-disaster recovery.

Resource	Type of Assistance and Intent
Communication Post-Disaster	American Sign Language: How to Register for Disaster Assistance • Brief video, signed and voiced, on registering for disaster assistance https://www.fema.gov/media-library/assets/videos/107362 30 Emergency Management Organizations to Follow on Twitter • When disaster strikes, the government, nonprofit organizations, and citizens work together to restore order and provide assistance. Communication is critical to keeping the general public informed on the status of the disaster. While the media and word-of-mouth are common ways to provide information, some emergency management organizations use social media and other outlets to keep residents updated. Follow these 30 organizations to stay informed https://onlinempa.unc.edu/30-emergency-management-organizations-to-follow-on-twitter/ The Use of Social Media for Disaster Recovery • A guide to setting up a disaster recovery site including best practices and tools https://extension.missouri.edu/greene/documents/PlansReports/social%20media%20in%20disasters.pdf
Community Recovery Management Toolkit For more information: https://www.fema.gov/national-disaster-recovery-framework/community-recovery-management-toolkit	• A compilation of guidance, case studies, tools, and training to assist local communities in managing long-term recovery following a disaster. The materials are aimed at providing guidance and resources to help local officials and community leaders to lead, organize, plan for, and manage the complex issues of post-disaster recovery.

Resource	Type of Assistance and Intent
Effective Coordination of Recovery Resources for State, Tribal, Territorial and Local Incidents For more information: https://www.fema.gov/media-library/assets/documents/101940	This guide outlines best practices and approaches for states, tribes, and territories to help enable a more effective recovery for local communities after an incident of any size or scale. It is designed to be applied either in concert with existing pre-incident recovery plans or to enhance post-incident planning efforts
Post-Disaster Financing Guidance	Grant Writing Guide: A Process to Request Recovery Assistance – Provides guidance on writing successful grant proposals https://www.fema.gov/media-library-data/20130726-1819-25045-2871/local_grant_writing_guide.pdf Federal Disaster Recovery Funding: Minimizing Roadblocks to Maximize Resources, International Economic Development Council (IEDC) - Report is intended to help guide local and state economic recovery stakeholders including economic development organizations, local and state government agencies, chambers of commerce, economic development districts and other recovery officials around some of the roadblocks to using federal funds for economic recovery purposes. The report shares how federal requirements can sometime hinder the recovery process and provides insights about the process of requesting waivers of these requirements. Many of the recommendations are based on input from economic recovery practitioners and federal officials interviewed for this research. Local communities can use this information to help maximize the speed and efficiency of their economic recovery efforts after a disaster. http://www.iedconline.org/clientuploads/Downloads/IEDC_Minimizing_Roadblocks.pdf

Table 5.3 Non-Government Funding Resources for Post-Disaster Recovery and Mitigation

The following resources are examples of non-government funding resources for post-disaster recovery and mitigation.

Resource	Type of Assistance and Intent
Examples of Philanthropic Disaster Funding Resources	A variety of private philanthropic organizations provide funding for disaster relief and recovery. Examples include: Conrad N. Hilton Foundation Disaster Relief & Recovery • Supports disaster preparedness, relief and long-term recovery https://www.hiltonfoundation.org/priorities/disaster-relief-and-recovery Lions Club International Foundation • Whenever and wherever disasters strike, Lions are often among the first to offer aid—and LCIF is right there with them, ready to support their efforts with funding assistance through Lions disaster relief programs. Working together, LCIF, local Lions and Lions leaders assess the urgent needs and quickly deliver the aid most required by victims. Emergency Grants are available to provide for basic immediate needs including food, water, clothing and medicine. • Through Major Catastrophe Grants, LCIF helps with long-term reconstruction projects to help victims begin to return to their lives and regain their independence. http://www.lcif.org/EN/apply-for-a-grant/disaster.php Northwest Minnesota Foundation In order to prepare for future disasters, NMF has been participating in the Philanthropic Preparedness, Resiliency, and Emergency Partnership (PPREP) cohort since 2014. This group of community foundations from across the Missouri River Basin has been convened by the Funders' Network for Smart Growth and Livable Communities. http://www.nwmf.org/home/donors/disaster-recovery-funds/

Resource	Type of Assistance and Intent
Voluntary Organizations Active in Disasters (VOADs) National Voluntary Organizations Active in Disaster Long-Term Recovery Manual http://www.arvoad.org/NVOADLTRecovery.php COAD (Community Organizations Active in Disaster) http://www.communitycouncilstc.org/disasteremergency-planning-coad Examples of Multi-state VOADs https://www.mwvoad.org/ http://www.tristatevoad.org/	VOADs are Long Term Recovery Groups formed by communities and voluntary agencies. The VOAD framework, with many faith-based organizations, provides the venue for agencies to coordinate, collaborate, communicate, and cooperate on disaster planning, training, response and mitigation. Community agencies and newly established nongovernmental organizations may form to assist VOADs with long-term recovery, and promote hazard mitigation • Key players for supplying organizational skills, materials, funds, and voluntary labor especially for poor, disadvantaged, and elderly disaster survivors. • Local non-governmental organizations (NGOs) not connected to VOADs and other local entities, whose focus may be childcare, elderly, housing, and others with special needs, join VOADs to optimize response objectives. • Voluntary Organizations Active in Disasters (VOAD), and / or its member agencies, will frequently set up some type of Long Term Community Recovery Group. Community agencies and newly established organizations will come into existence to deal with long-term recovery. • If those impacted by disaster still have needs unmet by other programs, VOADs may be able to provide building materials, labor, or other types of assistance. • The VOAD framework occurs at national (NVOAD), state (VOAD) and community (COAD) levels. • Community Organizations Active in Disaster (COAD) is a group of community organizations, businesses, nonprofits and individuals working together to plan community responses to a variety of emergency and disaster situations. • Multi-state VOADs convene multiple state VOAD Chapters around common interests such as geography, population density, shared culture, or shared threat. These VOAD chapters promote VOAD principles, improve interstate relationships, promote best practices, and pool resources.

Hazard Mitigation (HM) Technical Assistance

Within three days of the Presidential disaster declaration, a Joint Field Office (JFO) is established where FEMA and the State can coordinate multiagency disaster response and recovery efforts for the areas impacted by the disaster. Federal and state resources operate in the JFO with the primary objective of supporting the community. Communities should request technical assistance from the State Hazard Mitigation Officer or the State NFIP Coordinator. If those resources are overwhelmed, requests can be forwarded to the JFO. The following provides a synopsis of the types of technical assistance that may be available in this manner.

HM Community Education and Outreach promotes effective hazard mitigation through community education, outreach, training, and coordination with public and private sectors.

- Provides advice to the public on hazard mitigation techniques and measures through Disaster Recovery Centers (DRCs), other disaster assistance facilities, community meetings, and special events
- In cooperation with the State, promotes partnerships and training of local officials, the construction industry, and residential and commercial building owners
- In partnership with FEMA External Affairs, identifies, documents, and disseminate Best Practices, which illustrate a variety of sound and effective mitigation measures from the current disaster
- Provides publications to disseminate hazard mitigation information throughout the declared counties
- Assists with community stakeholder engagement

HM Floodplain Management and Insurance serves as the Joint Field Office (JFO) point of coordination and resource on flood insurance.

- Promotes community participation in the NFIP and ensures compliance with NFIP regulations
- Provides early estimates of substantially damaged structures and support for substantial damage data collection
- Assists policy holders with flood insurance claims
- Assists NFIP agents
- Conducts information gathering : NFIP policies in force; number of NFIP non-participating, sanctioned or suspended communities

HM Hazards and Performance Analysis (HPA) provides engineering, economic, and scientific analysis in support of hazard mitigation programs, and ensures that technical hazard mitigation information is available to all local, state, and federal recovery partners. It is the focal point for data collection and analysis in support of hazard mitigation initiatives for all disaster services.

- Provides analysis of hazards and impacts, such as wind analysis, flood depth, inundation, and velocity studies
- Conducts damage assessments and loss estimation analysis to identify hazard mitigation opportunities and benefit-cost data
- Supports Section 406 of the Stafford Act, which authorizes FEMA's Public Assistance (PA) Program. Loss avoidance study opportunities Determining feasible and cost-effective Section 406 mitigation opportunities

HM Hazard Mitigation Grants and Planning supports state and local participation with programs authorized by Section 404 of the Stafford Act (Hazard Mitigation Grant Program (HMGP)) and Section 322 of the Disaster Mitigation Act (mitigation planning).

- Support includes assistance to state and local entities in development of multi-hazard mitigation plans and utilization of hazard mitigation funding from the HMGP to reduce the loss of life and property from future hazard events
- Provides technical assistance for the development, maintenance, and updating of state and local hazard mitigation plans
- Provides or obtains extensive technical, staffing and resource assistance for identification and development of mitigation projects to support hazard mitigation plan implementation

Summary

This chapter has focused on the opportunities presented by a presidential disaster declaration for continuing the journey to a disaster resilient community. Communities that know what resources are available, and the requirements for obtaining them, can be prepared to implement disaster risk reduction and are less likely to become mired in confusion or allow rebuilding without risk reduction.

The "10 P's" of Post-Disaster Safe Recovery

Even with help, recovering and getting back on the road to disaster resilience is not an easy or rapid process. It requires constant attention to what we refer to as the "10 P's" of Post-Disaster Safe Recovery:

People Put people first. Gather together and listen to the people, including victims, public officials (who may also be victims of the disaster), subject matter experts, and taxpayers. Establish goals including determining, in a collaborative way, what are the best solutions for the immediate situation and for future generations.

Posterity We hold the earth in trust for future generations. We must think long term and broadly, finding creative, sustainable and resilient solutions. Just because something has "never been done that way before" does not mean it will not work now.

Patchwork No single program exists to meet all the needs of the community or each individual. We need to take a bit of "this and that."

Persistence Never give up. Keep talking. Keep negotiating (and never start any discussion with a "no"). Keep searching for the right answers and the right programs to meet specific challenges and needs.

Problems Keep focusing on problems. Synergy is important. Bring resources together. Bring stakeholders together. Communicate. Focus. How do allies, partners, and skeptics view the problem? How can differences be resolved and critical needs met?

Prudence Focus efforts on achievable goals. Everyone's time is limited. Do not squander time on roadblocks. Move on and come back later to issues that cannot be easily agreed upon.

Personal Decisions Following a disaster, people must make critical decisions about their lives, their families and their futures. Remember that this is a democracy and decisions must be made within a participatory engagement framework involving all who have a stake in the future of a community. Disaster survivors will need resources; and will probably require additional help and support, such as mitigation counseling, as well as crisis counseling, which is often available, needed, and vital following a disaster.

Proactive Take the initiative. Seek help. Expand your staff. Take advantage of the limited window of opportunity to create, fund, and complete the programs that will make a difference, long term, in your community.

Patience This is a difficult time for everyone: victims, community leaders, and people assisting with the recovery. We need patience, particularly when systems are shattered beyond any possibility of quick repair. We need to maintain calm. Help is available foreveryone. Remember that community leaders are often victims themselves. And when the task at hand seems overwhelming, remember to call a time out, whereby you can regroup and come back to the issue with a calm perspective.

Plain Common Sense We must describe our processes, plans and programs in a straightforward way. The concepts should "sound right." They should provide logical solutions; that resonate as the "common sense" thing to do.

Community Example of Post-Disaster Success

The small farming town of Greensburg sits on U.S. 54 in south-central Kansas, laid out in neat square blocks. It is farm country, home to wheat, soybeans and cattle growers.

On May 4, 2007, an EF-5 tornado swept through Greensburg, essentially destroying the town. The storm killed 13 people and injured more than 60 others… and almost totally destroyed 95 percent of the structures in town.

"We lost half the population [to relocation] right away," Greensburg Mayor Bob Dixson told reporters. "They had no place to live. A lot of older residents moved to neighboring communities. But we were very blessed — 2.8 million of our friends and neighbors (the population of Kansas) came to help us."

"The Kansas Department of Transportation, the Kansas National Guard, many cities, counties and towns sent trucks and ambulances and equipment and volunteers."

Work to clear the wreckage of the town and care for the surviving residents started immediately.

The U.S. Forest Service set up a base camp and served more than 36,000 meals in the four weeks after the tornado. The Federal Emergency Management Agency installed hundreds of mobile homes that eventually housed about 300 families.

Recovery from the wreckage and planning for the future took place amid scenes of almost unimaginable devastation. Throughout the summer, residents held weekly tent meetings to discuss plans. Since the tornado wiped out all communication systems, residents depended on the "yellow sheet," a paper printed and distributed twice a week to get the word out about recovery efforts. At sometimes-stormy public meetings, Greensburg's battered survivors grappled with the complexities of receiving federal disaster aid and the daunting task of adopting a long-term recovery plan.

What would the future hold for Greensburg? Would, could, the town rebuild — and how? The result of this community effort is amazing: America's greenest town.

Greensburg is now the world's leading community in Leadership in Energy and Environmental Design (LEED)-certified buildings per capita. The town is home to a half-dozen LEED-platinum certified buildings, including a new City Hall and the new 48,500-square-foot Kiowa County Memorial Hospital. Renewable energy powers the entire community, and the streetlights are all LED.

The idea to "go green" was floated early on. At the very first tent meeting, held a week after the tornado, resident Daniel Wallach proposed rebuilding as a "model green community." That summer, he helped found Greensburg GreenTown, a nonprofit organization that became an information clearinghouse for the town's environmentally minded reconstruction.

Mayor Dixson concedes that some residents "cringed a little bit" at all the green talk. "For some people it sounded very 1967-1968, you know, powder-blue bell bottoms and tie-dyed shirts.

The number one topic at those tent meetings was talking about who we are — what are our values?" he tells reporters.

"There was a lot of hard work, a lot of discussion. Some of it was positive, some of it was less than positive. Sometimes we agreed to disagree, but we were still civil to each other. And let's not forget that our ancestors were stewards of the land. My ancestors lived in the original green homes: sod houses."

An environmentally minded Kansas City design firm, BNIM, worked with the town and FEMA to help create a long-term recovery plan. Gradually, the notion to go green gained traction with town residents, and they came to embrace the possibility of turning the town into a living laboratory for sustainable development. Eight months after the tornado, the Greensburg City Council adopted a resolution: All large public buildings in Greensburg with a footprint exceeding 4,000 square feet must meet the LEED-platinum standards of the U.S. Green Building Council and utilize renewable energy sources.

One enormous infrastructure change was Greensburg's conversion to "100 percent renewable energy, 100 percent of the time," as Dixson describes it.

Today the wind that nearly destroyed Greensburg is what keeps the town's lights on. Turbines can be seen catching the wind throughout residential neighborhoods and the business community. The energy needs of the larger Greensburg community are met by a wind farm just south of town.

The decision to rebuild in green-friendly ways added to the cost of the town's reconstruction by as much as 20 percent. The expense attracted attention in Washington — the source of much of the reconstruction money — and in June 2008, Hewitt was asked to testify before Congress. His testimony was eloquent and compelling. "Green starts in rural America," he said, and the committee was convinced.

Mayor Dixson sometimes waxes philosophical about Greensburg's extraordinary rise from the rubble. "You have to do the best you can with the resources you have," he says. "We learned that the only true green and sustainable things in life are how we treat each other."

And he's pleased that many of the rebuilt homes in Greensburg feature roomy front porches. "We need to get back to being front-porch people."

Sources: The Associated Press; especially note: US Department of Energy (http://www.nrel.gov/buildings/pdfs/53539.pdf), USA Today (http://www.earthgauge.net/)

Chapter 5 References

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6 How Have Others Succeeded?

Successful Stories from Travelers Who Made the Journey

Previous chapters have discussed the complex and often-arduous journey communities must travel as they pursue a disaster resilient vision – planning the route; identifying and obtaining the resources to fuel the journey; convincing important passengers to "help with the driving;" plus dealing with delays and roadblocks and the biggest detour, a major disaster.

These communities have learned that "failing to plan is planning to fail."

Even then, those committed to the journey see the opportunities for reducing disaster risk during recovery and for rebuilding that can be implemented if they make adjustments to their roadmap. The route they take may have been altered but the destination remains the same – a safer and more resilient future for the community.

This chapter offers two kinds of trip journals:

- The first three are stories of ordinary citizens who were leaders in moving their communities along the road to disaster resilience. They describe successful efforts by local organizations working with available resources to anticipate catastrophic events.
- The second are synopses and links to other "trip journals" of disaster resilience travelers, and their communities of all sizes, as they follow their plans to reduce risk and continue to enhance their resiliency in the event of future disasters. They include successes in structural mitigation, collaborative planning, community outreach and engagement, individual property owner mitigation efforts, flood and wildfire.

These journals reflect a mere snapshot of the numerous accomplishments of mitigation-focused stakeholder initiatives. Through individual and community-wide efforts, innovation and proactivity have resulted in mitigation successes.

"If we don't do it now, folks are going to be sitting here a 100 years from now dealing with the same thing."

Successful Journey: Mystic, Connecticut

The residents of this coastal Connecticut region recognize the value of investing in disaster resistance. Nor'easters and hurricanes have in the past brought destructive erosion, storm surge, downed utilities and more. These communities have learned that "failing to plan is planning to fail."

In recent years, several public meetings have been held to plan, mitigate, and adapt to climate-change issues that could mean even greater challenges in the years ahead. Participants included town residents, businesses, appointed and elected officials from local, state and federal governments, municipal staff, and others. They have worked together to anticipate change, plan for their future and seize every chance to take action to reduce their vulnerabilities.

One unplanned opportunity came in 2000 after a devastating fire in the Village of Mystic (located within the towns of Groton and Stonington) destroyed several waterfront businesses. , Firefighters were hampered by a tangle of live wires above the buildings that posed an extreme safety hazard and compromised the firefighting effort.

But the fire offered the Town of Groton an opportunity to mitigate future damage. The Mystic Streetscape Project, conceived in the late 1990s as an upgrade to sidewalks and parking along West Main Street, was expanded through the acquisition of additional funding from the Federal Highway Administration's TEA-21-Transportation and Community Systems Preservation program to protect the electrical, telephone, and cable lines by burying them underground.

By 2009, the planning that had been done on the overall project meant the community was also eligible for financial help through the American Recovery and Reinvestment Act to supplement the utilities retrofit portion received from the highways grant. The disruption during construction was considerable and the expense enormous, but the project became a "once in a lifetime" effort to make the necessary improvements.

The Mystic Streetscape and Utility Relocation project brought dramatic improvement to this historic and economically vital area. Pedestrian safety has been improved with innovative sidewalk and crosswalk design. Renovations also improved drainage. In keeping with the character of the village, old-style street lamps replaced poles, wires were placed underground, and power transformers that previously detracted from the scenery and could threaten lives during storms and fires were newly constructed at appropriate ground locations.

A severe test of these changes came during Hurricane Sandy in 2012, which brought a foot of water into downtown businesses. Buildings served by the new system never suffered any loss of power.

Groton and the surrounding region are actively and aggressively planning for Climate Change challenges and the town has prepared a model plan for use by other Northeast communities.

Source: FEMA Best Practices Region 1

Successful Journey: Vilonia, Arkansas

One Vilonia, Arkansas, family escaped an EF-4 tornado without injury even as their home was blown apart around them because their in-laws had installed a safe room, as recommended by FEMA and other disaster mitigation agencies.

Nicky Havens said he first sent his three children to his wife's parents' home across the street because he knew they had a small, metal safe room installed in their garage.

Havens and his wife joined them in the small space as the massive tornado moved into town.

"We'd seen it coming and we heard it coming, so we got in the safe room," he told a reporter for the local newspaper. "It beat it pretty bad, but it worked. I'm proud of it."

The house didn't fare as well. The tornado's winds ripped the roof off and downed walls, spewing splintered wood and crumbled brick around the yard. Wind hurled bricks through the windows of a car that had been parked next to the safe room.

Havens said the family didn't talk while they "hunkered down" in the safe room, their "hearts thumping" as they listened to the tornado wreak its havoc on the home.

"It felt like [the room] was just going to take off at any time," he said. "We knew the house was gone. You could hear it just take off."

The next day, the family was back at their in-laws' home working to salvage what items they could. It was hard to see it in such shape, Havens said. "But, hey, we're glad to be alive," he said outside his home, which was damaged but not destroyed.

Meanwhile, hundreds of Vilonia residents were sheltered in a massive safe room built with FEMA grant money received after a deadly tornado just three years before.

Since the 2014 storm, FEMA has agreed to pay more than $1 million in federal grant money to build a new community safe room in the town's intermediate school, which was destroyed in the storm. The grant will pay for a safe room to house up to 1,048 people and withstand winds up to 250 mph.

Sources: Arkansas Online, Associated Press

Successful Journey: Thiensville, Wisconsin

For nearly 50 years, the downtown area in the Village of Thiensville, in Ozaukee County, Wisconsin, had been plagued with the constant flooding of nearby Pigeon Creek, which repeatedly affected ten residential and thirty commercial properties. After six major floods – four of which resulted in a federal disaster declaration – the village decided to do something proactive.

After going through the Disaster Mitigation Planning process in 2002 with help from FEMA, the townspeople came up with a project that remedied some of their worst woes.

"We had a storm in1985 and previous to that there were several storms in the early seventies and eighties that flooded downtown Thiensville," recalls Mike Campbell, project engineer. "As the consulting engineer, I identified major restrictions that had been placed in the creek, a lot of man-made obstacles. When it rained … Pigeon Creek would overtop its banks and downtown would flood."

In 2006, the City of Thiensville received a Pre-Disaster Mitigation grant totaling $2.3 million, and the resulting project was executed in three phases. First, easements were obtained to detain some storm water at targeted intersections. A plate was installed on the upper half of each outlet culvert, and that limited the culvert's outflow during high water events.

Next, two undersized culverts under a road from a parking lot to a commercial building were removed and replaced by a 50-foot clear span bridge.

Finally, the high flow channel of the creek was widened from a mere five-to-ten foot in some areas, to 60 feet. A meandering 25-foot-wide rock-lined low-flow channel was created for fish passage. Invasive trees were removed and replaced with native species. Wetland and prairie plants were added along the creek's bank to prevent erosion.

The project was costly and complex, but the town plowed ahead. Patience, perseverance and "political will" fostered completion of the project. "We had a tough time coordinating with utility companies because the project was 'on again, off again,' resulting from a lack of a full commitment to move forward," said Campbell. "We had to fast-track the construction contracts, too. They were bumping into each other because of it."

"A motivating factor included the fact that we had an original board (with no new members to question the project and re-argue its value), who knew about all the years of flooding and who probably thought 'If we don't do it now, folks are going to be sitting here a 100 years from now dealing with the same thing,' " says Karl Hertz, village president.

And the plan worked. According to Andrew LaFone, director of public works, the village has had three flood events since the work was done that would have normally caused road closures and property damage in the downtown area.

"Water flows from two directions into Pigeon Creek, northeast and northwest and it all dumps in about a block and a half before Pigeon Creek gets to the Milwaukee River," said Hertz. "This project took care

of the northwest water. We have executed two or three projects over the years to handle the northeast flow, including securing funding for the construction of detention ponds."

Heralded as a mitigation measure, residents say the project fostered other positive aspects including partnerships with a neighboring city, Mequon, for upper storage, private property owners who provided easements for the project and other state agencies such as the Department of Natural Resources. It also had a positive effect on fish habitat. "Would we do it again?" says Campbell. "Yes, we would. We had an end goal in mind and we followed procedure … the project is functional and it's also beautiful."

Sources: See FEMA's Local Mitigation Planning Handbook at (https://www.fema.gov/media-library/assets/documents/31598) and Sample Local Mitigation Plan Scope of Work for Mitigation Grant Application (www.fema.gov/library/viewRecord.do?id=1858)

Successful Journey: A Flood Mitigation Project Enhances a City

Chains of Wetlands Project Reduces Flood Risks in City of Dallas: Utilizing a proactive public, private, academic partnership, the City of Dallas completed a Wetlands project to reduce flood risk through the redesign of an important ecosystem located in the heart of the city. The project to construct the man-made chain of interconnected wetland ponds called for the removal of 271 acres of woody plants, including many trees, that would give clear passage for floodwaters. The bottomland forest then would be replaced with a new, richer, and far more diverse wildlife habitat. Directed by the USACE Lewisville Aquatic Ecosystem Research Facility, students from the University of North Texas, Texas A&M University, Collin Community College and North Texas Central College helped remove trees and replant plants. The successful project further resulted in a beautiful public outdoor recreation asset in the greater Dallas area.

Inland Flooding Best Practice - "Chains of Wetlands Project Reduces Flood Risks in City of Dallas"
https://www.fema.gov/media-library-data/1441824179010-165662af845a1ab0ae10d4a7e858a939/11_Chains-of-Wetlands-Project-Reduces-Flood-Risks-in-City-of-Dallas_web.pdf

Successful Journey: A University Hospital's Actions Benefit Their Community

The historic city of Charleston, South Carolina, faces the reality of the low-lying city's vulnerability to flooding. With consideration of a direct impact to residents, business owners, and community leaders, the Medical University of South Carolina's (MUSC) Department of Risk Management built and implemented a Disaster-Resistant University Plan, funded by a $75,000 Pre-Disaster Mitigation Grant (PDM) from the Federal Emergency Management Agency (FEMA). Mitigation solution: build an energy plant on the back of the hospital, erecting a steel and concrete platform system on which seven generators, each the size of a tractor trailer, and all auxiliary equipment were relocated and elevated out of harm's way. The facility and the community benefit from the ability to maintain a certain level of operation, protect patients and enhance capability for rapid recovery.

"Medical University Earns High Marks for Low Country Lesson in Disaster Resistance" - Medical University of South Carolina (MUSC)
https://www.fema.gov/media-library-data/1460994992484-4e0daa2012a75ba726ae3e7957b3a3e2/18_Medical-University-Earns-High-Marks_web-r.pdf

Successful Journey: A Requirement for Higher Building Standards Pays Off

Brazoria County, Texas, located in the Gulf Coast region of Texas, is part of the region known as the Texas Coastal Bend. Several principal streams flow through the county into the Gulf of Mexico. With a history of flooding, Brazoria County developed a regulation several years ago, to reduce flood risk by ensuring new construction is elevated. They established a best practice model for new construction permitting within a flood zone where all new construction must be elevated two feet above FEMA's NFIP recommended standards for SFHAs, creating a freeboard. In 2015, the first real test of the freeboard requirement occurred with rain that inundated southeast Texas causing massive flooding. A significant number of homes were flooded in Brazoria County but none that met the county's improved elevation standards were flooded.

Mitigation Best Practice - "Brazoria County Adopts Freeboard Regulation in Combating Flood Loss"
https://www.fema.gov/media-library-data/1441822561672-254e32a71d6e179b8d32ecfbbb1358d4/08-Brazoria-County-Adopts-Freeboard-Regulation-in-Combatting-Flood-Loss_web.pdf

Successful Journey: A City Teams with State and Federal Stakeholders to Reduce Flooding and Decrease Repetitive Loss

U. S. Army Corps of Engineers Digs in to Help Carencro, Louisiana – Carencro, a small suburb of Lafayette, is a community enhanced by the beauty of its natural environment. The 8,000 residents have been impacted by major repetitive flooding for years. The community is surrounded by an abundance of water from lakes, swamps, marsh basins, bayous, and other streams that require constant management. A partnership with the USACE and local public jurisdiction funded a study to determine how to channel water away and solve the problem of why the water was taking too long to drain. Additional public sector support of the study, to be known as the Coulee Cleaning Project, came from the Lafayette Parish Council which helped to close a significant funding gap. Additional funding was secured through local bonds and the Statewide Flood Control Program of the Louisiana Department of Transportation and Development. The application of initiatives in the plan, to include the cleaning of the coulees, clearing of trees and other accumulated debris and the construction of a six-acre detention pond, contributed successful mitigation to protect the community from severe impacts of future flooding.

Mitigation Best Practice - "U. S. Army Corps of Engineers Digs in to Help Carencro" - Louisiana
https://www.fema.gov/media-library-data/1466609504988-65b2264ba52540e04f05c4ded7e3a739/30-USACE-DIGS-IN-TO-HELP-CARENCRO-web.pdf

Successful Journey: Collaboration among Regional, State, and Federal Partners Streamlines the Mitigation Funding Process

Recovery is Built through Partnerships, New York State – In the immediate aftermath of Hurricane Sandy's damage the Region II New York Sandy Recovery Office's (NYSRO) Environmental and Historic Preservation's (EHP's) utilized collaborative efforts with internal staff, federal partners and New York State to streamline the project review process. Their work covered projects that varied in complexity, including projects for more than 100 bridges and a Mesonet, a network of more than 100 automated environmental monitoring stations. To expedite the process of minimizing the usual review period, the HMGP and EHP teamed for effective triaging of review steps to be done concurrently versus consecutively and with frontloading, improved project management and expedited review timelines. The team conducted a Programmatic Environmental Assessment reviewing the environmental and cultural resource impacts, while performing programmatic consultation reviews with multiple agencies, including New York's State Historic Preservation Office and U.S. Fish and Wildlife Service. The end result of this strategic process of prioritization was faster obligation of FEMA funds for the multitude of mitigation projects.

Recovery Best Practice - "Recovery is Built through Partnerships," New York State
https://www.fema.gov/media-library-data/1459168738113-19b259968ed01ea2116feb8663b90285/22-Recovery-is-Built-through-Partnerships_web.pdf

Successful Journey: A Framework for Engagement: the "Communiversity"

"Historically Black Colleges and Universities and the Research Agenda on the Oil Drilling Disaster and Sustainability in the Gulf," Dillard University, Louisiana – On September 8, 2010 at Dillard University in New Orleans, Louisiana, the NAACP convened a meeting of the Historically Black Colleges and Universities (HBCUs) in the five Gulf Coast states, in response to the British Petroleum (BP) Oil Disaster. The collaborative of 42 participants included representatives from 12 HBCUs, NAACP membership and leadership, as well as representatives from, the U.S. Environmental Protection Agency, the National Oceanic and Atmospheric Agency, the National Institutes for Environmental Health Sciences, the United States Coast Guard, BP, the National Association for Equal Opportunity in Higher Education (NAFEO), and the White House Initiative on HBCUs. The discussion on the HBCU vision for research was framed by four areas: Social Sciences, Public Health, Environmental Science, and Environmental Justice. This framework model of research, education and outreach rooted in the "Communiversity," engaged research that successfully combined community experience with academic knowledge and theories in a non-threatening environment.

Technological/Human-made Best Practice - "Historically Black Colleges and Universities & the Research Agenda on the Oil Drilling Disaster and Sustainability in the Gulf," Dillard University, Louisiana
http://action.naacp.org/page/-/HBCU%20Convening%20FULL%20REPORT--Final.pdf

Successful Journey: Increasing Traveler Safety in Tornado Prone Areas

New Rest Areas Designed with Tornado Safety in Mind, Texas Department of Transportation – The Texas Department of Transportation (TxDOT) constructed new rest area facilities throughout the state and with additional upgrades have included tornado shelters. The Safety Rest Area Program, recognizes North and West Texas are tornado prone areas and placed the tornado shelters in rest area facilities that are in high risk areas. The TxDOT planned to place the rest areas within a 100-mile radius of each other and along both sides of the highway. Constructed in accordance with FEMA guidelines, the tornado shelters have capacity for at least 20 people, and include a surveillance camera. Interesting wall plaques, depicting historic tornadoes which touched down in the state of Texas and additional facts regarding tornado safety, are intended to pique travelers' interests while in the rest areas. An added safety-focused value in the visual representations is to encourage travelers to take a little longer rest break from driving.

Tornado Best Practice - "New Rest Areas Designed with Tornado Safety in Mind," Texas Department of Transportation (TxDOT)
https://www.fema.gov/media-library-data/1466608611039-c454b6feda189d3a29a93208739a7e2a/28-New-Rest-Areas-Designed-web.pdf

Successful Journey: Proactive Homeowners – Defensible Space and Fire-Resistant Construction

Defensible Space and Fire Resistant Building Materials Saves Property, Calaveras County, California – An individual property owner within a wildlife area maintained a defensible space around his property for years. However, to mitigate the potential impacts for wildfires he proactively chose to further enhance fire mitigation measures by clearing trails and problem areas in proximity to the property. These actions included the installation of fire-resistant metal roofing and siding on the house, garage, and shop building, which successfully withstood the extreme heat and the burning embers from the Butte Fire that swept through in September 2015. The fire burned through more than 70,000 acres, mostly in Calaveras County, damaging or destroying more than 1,000 homes. Many property owners who cleared and implemented cost-effective fire mitigation measures minimized potential damages.

Wildfire Best Practice - "Defensible Space and Fire Resistant Building Materials Saves Property," Calaveras County, California
https://www.fema.gov/media-library-data/1447679389449-808ccd96b83232eed1eb5d9891b93467/02_Defensible-Space-and-Fire-Resistant-material_web.pdf

Appendices

Introduction

These appendices provide additional context on the role of key community stakeholders, specifically within the legal field, towards the comprehensive development of disaster resilient communities. Capturing research and discussions from members and affiliates of the American Bar Association, these documented resources represent a broad overview of the unique challenges and opportunities through which lawyers can actively influence the adoption and implementation of effective and sustainable hazard mitigation practices… locally, regionally, and nationwide.

Appendix 1 examines and provides insight on the legal aspects of disaster planning, to include research, legal cases, patterns, and the underlying processes and issues regarding the regulation of development, interstate assistance, liability in disaster preparedness, insurance and disaster recovery, and the critical considerations of economic viability for business owners. Recommendations and resources for specific challenges are provided.

Legal Aspects of Disaster Planning was excerpted from Module 12 of *"Living Mosaic: A Path Forward."*

Appendix 2 highlights the American Bar Association presentation, by Jo Ann Howard, J.D., to attorneys representing local governments and businesses. Jo Ann Howard is the President of H2O Partners, Inc. and was the Federal Insurance Administrator, Federal Emergency Management Agency (FEMA) from 1998-2001. Ms. Howard is a former Vice President of NHMA.

The presentation provides overview of post-disaster topics and resources, including pre-disaster preparation for local jurisdictions and insurance aspects of reconstruction.

Appendix 1: Legal Aspects of Disaster Planning

Legal Aspects of Disaster Planning will synthesize the complex issues arising out of a landmark decision (*Koontz v. St. Johns River Water Management District*, 568_U.S., 2013, *see below*) by the US Supreme Court, and will provide a clear understanding of legal issues surrounding mandatory insurance, mutual aid (in its different forms) legal liability in disaster preparedness and will help participants parse though issues in insurance and disaster recovery. The intent is to de-mystify complex issues into a layperson's understanding, because both legal and non-legal Disaster Risk Reduction (DRR) Ambassadors for mitigation must have a common grasp of the issues and the stakes in disaster risk reduction as it relates to the law.

The American Bar Association (ABA) has taken the position that lawyers can, and should, play a key role in adopting and implementing hazard mitigation best practices in local communities, whose members are among the most likely to challenge mitigation measures at the state and local levels.

The ABA in Disaster
For more information, go to:
http://www.americanbar.org/aba.html

In 2009, the ABA's House of Delegates adopted resolutions that urged state, territorial and local governments to use a series of available tools to mitigate losses from future mega-catastrophes and to ensure the ongoing availability and affordability of insurance for natural disasters.

Specifically, the group urged the development of risk-appropriate, state-of-the-art building codes for new construction and cost-effective retrofitting measures for residences; adopting land use policies that discourage construction in areas that are difficult to evacuate, or pose unusually high risks to personal safety of consumers and first responders and to property; enacting property tax credits that offer grants to homeowners and businesses that invest in catastrophe mitigation measures; and adopting and updating emergency management plans.

The ABA also urged the federal government to use the multiple tools available to it to mitigate losses from mega-catastrophes by, among other things, adopting land use policies that discourage or prevent construction in areas that are difficult to evacuate or that pose unusually high risk to personal safety (to consumers and first responders) or property loss, and to require FEMA to incorporate the adoption and effective enforcement of statewide building codes in its Hazard Mitigation Grant Program.

In the past, courts have struggled with balancing Americans' right to develop their own property with the "greater good" of the wider community — particularly in regard to hazard mitigation concerns.

A 2013 New York Times article observed, "Because population density has been rising, behaviors with harmful side effects have been growing steadily more important. Our continued prosperity, and possibly even the planet's survival, will require thinking clearly about how to mitigate the resulting damage." Source: Ronald Coase, a Pragmatic Voice for Government's Role. Robert H. Frank, The New York Times. September 14, 2013: http://www.nytimes.com/2013/09/15/business/ronald-coase-a-pragmatic-voice-for-governments-role.html

These side effects will need to be carefully managed in the future in order to ensure both economic and environmental gains. So much of the devastation we describe as "natural disasters," is in reality a failure of human design, construction, planning, and community development in areas subject to the natural processes called natural hazards. These failures externalize into environmental plundering, which leads to costs for disaster survivors, especially the most vulnerable populations, as well as harm to communities, and huge costs to the taxpayer.

U.S. Supreme Court's Decision in the Koontz vs. St. Johns River Water Management District Case

In 1994, Coy A. Koontz had requested a permit from the agency to develop more of his land than the original permit allowed. St. John's agreed to issue the permit on the condition that Koontz deed the rest of his property into a conservation area, and also do some mitigation work on the surrounding areas which he did not own. Koontz agreed to the deed but not to the mitigation work, so St. John's denied the permit application.

Koontz sued, and the trial court found in favor of Koontz, awarding damages. Florida's Fifth District Court of Appeal affirmed, but the Supreme Court of Florida reversed. The U.S. Supreme Court then found in Koontz's favor.

However, the wording of the decision compels local and state governments to more closely examine potential harm that may be caused by a development, then carefully craft conditions for that development to mitigate harm in a more open and transparent manner. Hazard mitigation experts view the Court's decision as an opportunity for the "Whole Community"— insurance professionals, emergency managers, community development staff, elected officials, climate adaptation and mitigation specialists, and floodplain managers — to understand the importance of safe development based on the ancient maxim of property law: "Use your property so you do not harm others."

The ruling endorsed the underlying philosophy of safe development-based planning. As Justice Samuel A. Alito Jr. wrote in the majority opinion, "Insisting that landowners internalize the negative externalities of their conduct is a hallmark of responsible land-use policy, and we have long sustained such regulation against constitutional attack."

In *Koontz*, the Court strongly endorses preventative government action as a hallmark of responsible land use policy, which will prevent one person or group of people being permitted to take actions that will result in a disaster.

Koontz almost guarantees and encourages future litigation. However, going forward, agencies can avoid litigation by changing their practices. Agencies will have a heavier burden in providing scientific data that supports the need for mitigation in order to avoid litigation. In the past, agencies have enjoyed a deferential approach to their decision-making process. It is now vital for agencies to articulate the benefits, costs, and justifications for hazard mitigation. While agencies may view this extra work as a burden, providing this information can lead to increased community support for such projects. Communities will be able to witness firsthand the cost of development and the benefit of mitigation. In turn, this can lead to an increase in support for mitigation projects.

There are several ways to deal with the threat of increased litigation as a result of *Koontz*. Communities must practice principled, legal,

sustainable, and safe development. Communities can look to follow the Safe Development for Resilient Communities principles promoted by the Natural Hazard Mitigation Association in this and other documents available at: http://nhma.info/ as well as the No Adverse Impact principles promoted by the Association of State Floodplain Managers. Communities can also accomplish principled development through planning, partnerships, negotiations, multi-use mapping and engineering, and fair regulations to prevent harm. In the end, safe design and fair hazard regulation is a winning concept for the developers, agencies, and citizens of the community.

Koontz may have created a major incentive for communities and their representative agencies to say "no" to development in order to avoid possible litigation. However, in reality, communities cannot avoid development altogether; demographic pressures from an increasing population will force development. Our choice as a society is not either "development" or "no development." Rather, our choices are more accurately framed as: current practices that will lead to increased environmental despoliation, misery to disaster survivors, and huge costs to the taxpayer; or better planned, safer development that protects water resources, people, property, the environment, the economy, and the taxpayer.

All involved with development decisions can choose a win-win-win solution or a lose-lose-lose solution to inevitable development. In the end, the *Koontz* case gives the floodplain management community validation. Essentially, the case is a ringing endorsement of hazard mitigation and climate adaptation.

Koontz provides a great opportunity for communities by allowing them to decide whether they want better standards to protect the economy and taxpayers or prefer to continue with current practices that will only lead to destruction and future litigation. *Koontz* does not hurt, but rather supports, mitigation efforts to build a safer, more sustainable nation and world.

Regulating Development

So, why are we not doing more to safely and properly regulate development?

The National Oceanic and Atmospheric Administration commissioned a report based on interviews with community development officials around the nation. The conclusions of the report reveal that there are basically two reasons we are not doing more to lessen the severity of disasters. The primary reason is economics. Development near the water is more valuable, and local governments covet these high-value properties. Yet taxpayers pick up the costs post disaster, while the benefits go to the developers, local governments, mortgage companies, and engineering firms. The second reason local governments are not doing more to properly regulate development is fear of regulatory takings challenges. It is important to point out here, however, that research done by Dr. Jon A. Kusler, Edward A. Thomas, Esq., and others for the Association of State Floodplain Managers found that communities are most apt to pay when the developments they permit cause damages, not when the community denies a permit.

Such damage is easily predictable given current technology and better computer models. Further, Dr. Kusler was able to find only a few cases in which the landowner prevailed in a

regulatory takings suit against a municipality's denial of use, when the proposed use would have had substantial offsite effects or threatened public safety. In fact, courts have broadly and consistently upheld performance-oriented floodplain regulations, including those that exceed minimum FEMA standards. Regulations that require additional freeboard, impose tighter floodway restrictions, or very tightly regulate high risk areas, have consistently been upheld by the courts.

Regulations based solely on considerations of climate change may be a different matter. Even very conservative legal scholars, such as those at the Cato Institute, agree that if a regulation prohibits wrongful uses, then no compensation is required. But what is a wrongful use? Will the courts accept the theory of climate change as a basis for severe restrictions on development?

Other considerations beyond concerns about climate change, especially in coastal areas, may well be more persuasive to a court, however. For example, in developing property in floodplain areas, flood elevations present many uncertainties. Generally, when an engineer makes a critical calculation, he or she strives to reach a confidence interval of 90 to 95 percent that the calculation is correct. For flood elevations on the FEMA Flood Insurance Rate Maps, a 50 percent confidence interval is the norm, which may be appropriate for a map designed for the purpose of rating an insurance policy, but it is not good enough for public safety. It is possible to adapt to the very real uncertainties in future flood heights by designing buildings and other infrastructure located in floodplains to take such events into account. Other considerations such as warning/evacuation time, life safety, and concerns about debris from coastal property destroyed by a storm causing harm to property, that otherwise would not have been harmed, may also be quite appropriate for consideration in reviewing the worth of a coastal development.

Mandatory Insurance

The economics behind a disaster always involve the insurance market. With the increase in natural disasters, insurance is becoming a more frequent and, in many cases, a mandatory purchase. Under the National Flood Insurance Program, property owners in special flood hazard zones indicated by the Federal Emergency Management Agency *must* purchase flood insurance.

Before the program was created, only people with a high amount of flood risk bought insurance, despite the fact that flooding is the most common disaster in the U.S., according to Ernest B. Abbott, former General Counsel of FEMA, Washington, DC. This resulted in extremely high premiums and a lack of a private market for flood insurance.

Since this program forces many more people to get insurance, it can be politically reckless for officials to enact such requirements. "Congress is really annoyed because they don't want to keep coughing up lots of money," Abbott says, noting that nonetheless, Congress still cannot agree to substantial changes in the laws to help control costs. Jordan Fried, an Associate Chief Counsel for FEMA, Washington DC, who advises on the flood hazard mapping, says that after Hurricanes Katrina and Sandy, there were a plethora of difficulties that surrounded recovery and rebuilding.

"Historically, people have looked to FEMA or the federal government as a solution," Fried said, and while the government provides public

assistance and rebuilds public goods such as roads and schools, "government has never been there to pick up all the pieces like people may expect." He said there has been a lot of scrutiny around government costs, which raises questions about who is bearing the risks and who will pay when something ultimately happens.

Experts agree that this developing field needs lawyers to define policy and procedures as well as help state and local government clients get grants to create plans for loss mitigation. Abbott suggested lawyers interested in this area help develop a proposal to present to the American Bar Association to build upon the current hazard mitigation recommendations, as well as to advance educational tools for the public with webinars or videos showcasing successful case studies.

Legal Issues Where Interstate Assistance is Requested in Non-Declared Emergencies

As noted, Emergency declarations by governors allow them to implement the Emergency Management Assistance Compact, a multi-state agreement that facilitates the rapid sharing of equipment, personnel and other resources among states. There are instances where cross border assistance is needed, for example in some public health situations. Although states not infrequently face situations that threaten the health of their citizens and challenge the response capabilities of their public health infrastructure, those incidents rarely rise to the level of declared emergencies, preventing state officials from availing themselves of resources that may be located just across a state line. As a result, states may seek alternative methods to assist each other during public health situations that are not declared emergencies.

(Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, and Related Authorities as of April 2013: https://www.fema.gov/robert-t-stafford-disaster-relief-and-emergency-assistance-act-public-law-93-288-amended)

The use of out-of-state assets in non-emergency situations, however, is complicated by legal considerations that increase in complexity according to the level of assistance contemplated.

Information sharing efforts, for example, face few legal obstacles — but efforts to share equipment, use out-of-state laboratories, or utilize out-of-state doctors and nurses raise significant legal questions relating to:

- Cost reimbursement
- License and credential portability for medical or other personnel
- Liability
- Workers' compensation

Any cross-border mutual aid agreement that envisions the fast and efficient transfer of equipment and/or personnel will require participating states to resolve conflicts or contradictions among applicable laws and regulations. To achieve this compatibility, officials should consider the following strategies:

- Assessing whether the laws in their states allow for license portability from other states and consider joining existing multi-state agreements such as the Nurse Licensure Compact
- Reviewing their state's policies for the use of volunteer disaster workers, particularly as those policies relate to workers' compensation claims

- Assessing whether sovereign immunity, Good Samaritan laws or other statutes provide liability protections to volunteer health professionals
- Assessing whether the laws in their state effectively deal with the issue of private health organizations' ability to credential and privilege out-of-state medical professionals and work with the private sector to develop policies and protocols to allow for the use of out-of-state professionals
- Determining whether existing interstate agreements or arrangements address issues of cost recovery, liability, and workers' compensation and whether those arrangements might be applicable to situations affecting the public health
- Working with governors, legislators and public health officials in neighboring states to determine an appropriate strategy for aligning laws and regulations to facilitate the cross- border movement of public health professionals in non-emergencies

Legal Liability in Disaster Preparedness

One of the most important underlying principles of modern legal actions about Hazard Mitigation and Disaster Resilient Communities is the No Adverse Impact (NAI) standard. As explained in the many seminars for floodplain managers by Dr. Jon A. Kusler and Edward A. Thomas, Esq.:

NAI is a principle that leads to a process which is: legally acceptable, non-adversarial (neither pro-nor anti-development), understandable, and palatable to the community as a whole. The process clearly establishes that the "victim" in a land use development situation which causes harm to others is not the developer, but rather the other members of the community who would be adversely affected by a proposed development. Once concerns about safety are identified, a developer is liberated to plan and engineer their way to a successful, beneficial development.

Kusler and Thomas further explain that courts are likely to uphold a No Adverse Impact standard because it is generally consistent with common law rights and duties. In past decisions, courts have reasoned that regulations take nothing from landowners when they enforce common law rights and duties, and they have broadly upheld regulations designed to prevent landowners from creating nuisances or undertaking activities which violate other common law private property concepts — such as a "taking" — in part because no landowner has a right to cause a nuisance or violate the private property rights of others, even when this may significantly impact the landowner.

They argued that courts are likely to not only uphold a broad No Adverse Impact performance goal or standard, but also more specific implementing regulations which tightly control development in floodways, coastal high hazard areas, and other high risk zones in order to implement such a standard. They are also, they reasoned, likely to uphold very stringent regulations for small strips of land (e.g., setbacks) and open space zoning for floodplains where there are economically viable uses such as transferable development rights, forestry, or agriculture. Communities are likely to encounter significant "taking" problems only where floodplain regulations *permanently* deny all or nearly all economic use of entire floodplain properties. To see a more complete explanation of NAI, go to: http://www.floods.org/PDF/ASFPM_NAI_Legal_Paper_1107.pdf

Insurance and Disaster Recovery

Local businesses are the foundation of a community's economy, and their recovery is essential to the community's recovery. Without a plan, businesses can be cut off from supply systems, communication, facilities, and their important documents such as contracts, insurance policies, key contacts, and employee information. Planning can help alleviate panic when events occur.

But physical damage is only one way that a disaster can devastate and ultimately destroy a business.

Businesses also suffer financially when:

- Their employees cannot come to work after a disaster
- Their customers cannot reach the premises due to infrastructure damage or order of civil authority
- Their customer base has changed
- They cannot open due to a disruption of essential utility services
- Their transactions with a critical supplier or a major customer are disrupted

Successful recovery requires that businesses address these and other barriers. Timely access to financial resources can help businesses address the barriers to post-disaster recovery.

Businesses are faced with many competing financial needs after a disaster:

- They may need to repair or replace damaged business property, including premises, inventory and business equipment.
- Businesses also have fixed expenses such as rent, utilities, insurance, license/permit/franchise fees, loan payments, and property taxes, which continue even if a disaster disrupts their cash flow.
- Some businesses may also want to continue to pay skilled employees who are vital to the business and would be difficult to replace.

Businesses unable to address these needs may be forced to close, even if the business is viable in the long run, which makes the need for advanced financial planning, as well as risk assessment and mitigation measures, if possible. This can take several forms:

- The business can purchase commercial insurance, which promises to pay the business for a covered loss in exchange for a premium. Such a policy can provide property coverage, automobile coverage, business interruption and extra expense coverage, workers' compensation and employee liability coverage.
- A line of credit arranged in advance can provide businesses with access to needed funds after a disaster.
- Some businesses mistakenly rely entirely on federal Small Business Administration post-disaster loans, which:
  - Must be repaid
  - May not be available to all affected businesses
  - Are not available unless the President declares a federal disaster or the SBA makes an administrative disaster declaration

For more information, see "Risk Identification and Analysis: A Guide for Small Public Entities," Claire Lee Reiss, J.D., ARM, Public Entity Risk Institute Resource Library http://tap.pdc.org/TAPResources/RiskIdentification.pdf

Of course, businesses can self-insure against possible losses from disasters, relying on their own internal resources to meet post-disaster financial needs. Self-insurance is most appropriate when the business can identify internal financial resources or other reliable sources of funding (line of credit, commitment to provide additional capital) for disaster losses.

Without secure funding sources, businesses that intentionally self-insure are in no better position after a disaster than businesses that self-insure by default. Both will be scrambling for funds after a disaster.

Note that business owners and executives often don't see that they have a role in a community's disaster preparedness effort. While local government has the legal responsibility to address disaster risks and make emergency management plans, a business owner or executive's busy schedule may dictate their minimal involvement with a business continuity plan.

However, in the event of a disaster, local government cannot act alone in addressing all the needs of the community, particularly those of an economic nature, and will rely on the private sector's resources. Government needs the business community to be involved in planning for and responding to emergencies. For instance, businesses should:

- Routinely back-up computers and keep backups in a safe place away from the office; for example, use cloud storage. After Katrina, manufacturing firms in New Orleans had records destroyed
- Have insurance policies scanned and stored offsite
- Determine how they would deal with business continuity in all types of emergencies, from hurricanes to floods to a pandemic.

Here are some resources for businesses:

The Institute for Business and Home Safety's *Open for Business Basic* is a free guide to business continuity planning for the small to mid-sized business with 13 forms and a property protection checklist. https://disastersafety.org/ibhs/business-continuity-planning-why-its-important/

The Florida Business Disaster Survival Kit was created by the Tampa Bay Regional Planning Commission to assist the local business community in business continuity planning, hazards analysis and response, recovery and mitigation, and other preparedness resources. http://www.tbrpc.org/flbusinesskit/information_center/disaster_library.shtml

Ready Business was created to educate and empower individuals, small businesses and interested parties to prepare for and respond to emergencies. This resource is focused specifically on business preparedness. https://www.ready.gov/business

Sungard provides a number of free publications and case studies at their Knowledge Center on disaster preparation subjects such as business continuity planning, cloud computing, and data management. https://www.sungard.com

State Ready Business Programs: Be Ready Alabama; Florida Disaster; Ready Georgia; Kansas Ready; Be Ready Utah. http://restoreyoureconomy.org/ready-business/

SBA & Nationwide Insurance's *Small Business Preparedness Guide* helps business leaders better handle a disaster situation. This guide

provides common-sense solutions to protect assets. https://ohsonline.com/articles/2007/12/sba-nationwide-produce-small-business-disaster-preparedness-guide.aspx

Prepare My Business is an SBA website that provides small business resources for disaster and business continuity planning and testing, and provides free educational resources on key topics to reduce your business's risk and quickly recover following a disaster situation. https://www.sba.gov/starting-managing-business

SBA Disaster Loan Program is an SBA website which provides information on Business Physical Disaster Loans to repair or replace disaster-damaged property; and Economic Injury Disaster Loans (EIDLs) providing working capital loans to help small businesses, through the disaster recovery period, meet their ordinary and necessary financial obligations that cannot be met as a direct result of the disaster. https://www.sba.gov/content/disaster-loan-program

Community Resilience and Rapid Recovery of the Business Sector by Mary Graham at Charleston Metro Chamber of Commerce provides practical ideas for how business stakeholders should play a more active role in disaster recovery planning, business continuity planning, and response at the community's emergency operations center after a disaster. http://www.resilientus.org/publications/presentatioins/

Business Continuity Information Network is a web- based service where local businesses, county emergency management, and organizations that assist businesses can gather to share critical information and support continuity efforts before, during, and after a disaster. http://www.bizrecovery.org/

Disaster Preparation and Business Continuity Planning is a resource developed by the Central Florida Development Council that provides business continuity planning assistance, including resources on planning before, during and after a disaster. http://www.cfdc.org/CentralFlorida/media/Central-Florida/About%20CFDC/CFDC_Disaster-Prep-Plan-for-Website-2015.pdf

The State of Florida's Business Disaster Planning website will better prepare a business for future disasters by assisting them in creating a Business Disaster Plan. http://www.floridadisaster.org/dembusiness.asp

The Association of Business Contingency is the national association for business continuity professionals providing networking opportunities and a learning environment of programs, workshops and symposiums in the field of business continuity, disaster recovery, and emergency response. https://www.acp-international.com/

New York University's International Center for Enterprise Preparedness White Paper on business preparedness and insurance incentives http://www.intercep.nyu.edu/resources/

The Preparing a Business for a Pandemic course will assist small and medium-sized businesses in surviving a potential pandemic including the importance of business planning, communicating regularly with employees, and helping employees deal with a severe pandemic.

http://eden.lsu.edu/EDENCourses/Pandemic/Pages/default.aspx

Business USA provides information on a wide variety of opportunities for small businesses to compete for government contracts, including a list of state and federal procurement agencies, information on how to register as a contractor and bid on opportunities, as wellas the rules and regulations that state and federal contractors need to follow. https://business.usa.gov/

Florida Atlantic University's Public Procurement Research Center provides online classes in public procurement while earning college credits at either the undergraduate or graduate level. http://cdsi.fau.edu/

Agility Recovery Solutions provides business continuity and recovery strategies, consulting services and testing options to businesses across the United States and Canada. http://www.agilityrecovery.com/

National Federation of Independent Businesses (NFIB) hired the Gallup Organization in 2004 to poll small-business owners about whether specified types of natural disasters impacted their business operations in the last few years. The findings concluded that at least 30 percent of the 750 surveyed businesses had been closed 24 hours or longer at least once within the last three years. Almost 25 percent of those that had closed their doors were due to tornadoes, hurricanes, wind storms or floods, while 20 percent were due to blizzard or extreme cold conditions. http://www.411sbfacts.com/sbpoll-about.php?POLLID=0023

Appendix 2: Local and State Officials Coping with Disasters

PRELIMINARY PAPER
AMERICAN BAR ASSOCIATION
AUGUST 8, 2013

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Purpose of Presentation *– To give attorneys representing local governments and businesses an overview of post-disaster topics including* ***Pre-Disaster Preparation for Local Jurisdictions and Insurance Aspects of Reconstruction***

I. BACKGROUND: POPULATION AND CLIMATE CHANGE PREDICTIONS

It is predicted that exposure to natural disasters will greatly increase in the United States during this century.

Long-term weather trends indicate that many parts of the country will see more dramatic weather patterns, exposing them to far greater risks than in the past; while at the same time more people are moving into the areas of our nation most at risk of flood, wildfire, earthquake and other natural hazards. Frequently, those moving to the riskiest areas are developing extremely expensive properties in a manner not calculated to survive foreseeable natural events.

Risk is the chance or probability that persons and property will be damaged or destroyed when exposed to a hazard.

This increased exposure means Americans will suffer more damages, as we will have vastly more assets and more people at risk.

For this reason, it is imperative for cities, counties, businesses and individuals to prepare for these disaster events. That starts with awareness of **risk reduction options**.

While exposure to **hazards** is not fully controllable, risks can be – and must be – managed to reduce the loss of lives and property.

A June 2013 FEMA report concludes that climate change is a major driver of increased flood risk.

According to a FEMA study, rising seas and increasingly severe weather due to climate change are expected to increase the areas of the U.S. at risk for floods by up to 45% by 2100.

It is estimated that the number of people in high-risk areas will increase by 100% during this period!

The report stated that sea level rises of 4-6 feet will cause shoreline erosion and recession, and create greater surge risk in the event of major storms.

Flooding around rivers will likely become worse in a warming world due to changes in precipitation frequency and intensity.

("Map: Places That Will Flood More Often Due to Global Warming." Sheppard, Kate and West, James. Visited 6/29/2013. http://www.slate.com/articles/health_and_science/climate_desk/2013/06/map_fema_study_shows_flood_hazard_areas_may_increase_45_percent_by_2100.html)

Another reason for increased risk: Demographers document that people in this country continue to congregate most densely around coasts, rivers and lakes, and in areas subject to wildfires and other natural events.

But it isn't just wealthy people retiring along these bodies of water who will be exposed to this increased risk. Ports and transportation

systems for petrochemical plants and other industries are linked to the coastline, attracting large numbers of people who are living there to work.

Americans live in the most severe-weather-prone country on Earth.

According to the National Weather Service, each year, Americans cope with an average of:

- 100,000 thunderstorms, 10,000 of which are severe;
- 5,000 floods;
- 1,000 tornadoes; and
- An average of 2 land-falling deadly hurricanes.
- Some 90% of all Presidential declared disasters are weather-related.

(NWS StormReady. Visited 6/29/2013. http://www.stormready.noaa.gov)

II. ASSISTING LOCAL GOVERNMENT AND BUSINESS CLIENTS BEFORE AND AFTER NATURAL DISASTERS

A. Plan

The first step in helping local governments prepare for a natural disaster is to advise the jurisdiction to develop a Hazard Mitigation Plan that meets, or preferably exceeds, state and federal requirements, as set forth in 44 CFR Parts 201 and 206.

A Hazard Mitigation Plan is essential for multiple reasons:

First, a hazard mitigation plan should be designed to ensure that development decisions do not make the existing risk and consequences of a foreseeable natural event even worse than it will be based on the current situation.

Second, mitigation plans are required in order to be eligible to apply for certain federal grants for recovery reimbursement.

Third, without a plan to reduce a community's risk, when the inevitable disaster occurs, damages will likely be far greater than if the local government had taken steps in advance to reduce damage levels.

Sustainability is all about risk knowledge and taking smart actions to address them.

Every community is different; there is no cookie-cutter plan. That's why elected officials and community leaders have to look at their own unique risks and assets well in advance of a disaster.

This is no small undertaking; it costs time and money to assess a community's risks and formulate an effective hazard mitigation plan. That's why it is so important to know where to turn for financial assistance.

Hazard Mitigation Grant Program (HMGP) funding to develop a plan may be available through the state emergency management office.

1. Briefly, the **planning process** involves:

- Listing hazards specific to the jurisdiction;
- Ranking those hazards;
- Identifying the community's assets – the drivers of the local economy; and
- Inviting representatives of each "driver" to disaster mitigation planning meetings.

2. It is important to have all stakeholders and entities that would have something to contribute represented. For example:

- A port city depends on its port authority and the ability to receive cargo.

- A military installation in a community has a tremendous impact on its local economy.
- In cities where medical centers are predominant, such as Houston, hospitals are an important economic driver.
- Large private businesses, such Walmart and HEB, can be recruited to pre-position water trucks in the event of a disaster.
- Nonprofits such as churches and charity groups play an important role in disaster response.
- It is crucial to have representatives of all of these entities present during disaster planning. They are important stakeholders in the community, and they can make tremendous contributions when disaster strikes.

3. Once you begin the planning process, look closely for **opportunities to mitigate**. Each community has unique exposures that can be reduced with thoughtful planning. For instance:

- In a coastal community, a school located five blocks from the shoreline may need a safe room.
- Think carefully: What steps would make the community safer in the event of a disaster, and where will the funds come from to take those steps?
- Where are the underground oil pipelines in your community?
- Do you have dams that need restricted access? I live in Austin, Texas, where the Colorado River flows through the heart of our city. Should one of the dams on or above the Colorado fail due to a natural disaster, our city would suffer tremendous loss of life and economic damage.

  These are just a few examples of literally thousands of vulnerabilities to which you may be exposed, and each city or community has its own specific set of risks. It is up to local government and community leaders to evaluate their risks and put a plan in place to reduce them.

4. **Funding for mitigation actions** can come from a number of sources, including local funds, state and federal grants, and technical assistance programs.

During the hazard mitigation planning process, reviewing a list of potential funding sources will help in prioritizing projects.

For any grant a community receives, grant management will be required. This involves meticulous record-keeping and reporting on how grant funds are spent.

To help our local clients with this process, H2O Partners has developed a "Guide to Funding and Technical Assistance Programs that Support Hazard Mitigation."

This guide identifies and describes more than 90 federal and state grants and technical assistance programs that can be accessed to implement hazard mitigation plans. Planning and grant management work can be done in-house or through contractors who work in this area.

B. Develop Agreements and Contracts Before the Weather Event

There are several types of pre-planned ways in which communities their governing bodies commit to assist each other in disaster situations.

FINANCIAL STRATEGY FOR LOCAL & STATE GOVERNMENTS as written agreements ahead of time can significantly increase the possibility of receiving funding from federal agencies for costs incurred in a disaster.

1. **Mutual Aid Agreements** and assistance agreements are contracts between agencies, organizations and jurisdictions that provide a mechanism to quickly obtain emergency assistance in the event of a disaster.

This assistance may be in the form of personnel, equipment, materials, and other associated services.

The primary objective is to facilitate rapid, short-term deployment of emergency support prior to, during and after a disaster.

2. **Memorandums of Understanding** between jurisdictions are, essentially, an example of governments helping governments. For instance:

- A school district may have an agreement to use another district's school buses in case of disaster, or
- An electric co-op may use another provider's lines to help restore power to its customers.

These types of agreements are crucial to maintaining order and continuing services when disaster strikes, but they must be in place pre-disaster. Otherwise, valuable time is lost restoring services.

3. **Types of MOUs:**

- Emergency Management Assistance Compact (EMAC) (https://www.emacweb.org/) – An interstate mutual aid agreement that allows states to assist one another in responding to natural and manmade disasters. It is administered by the National Emergency Management Association (NEMA).
- Model Intrastate Mutual Aid Legislation – Legislation produced by NEMA in concert with DHS/FEMA and a cross-section of emergency response disciplines to facilitate intrastate mutual aid among participating political subdivisions in a state.
- The document also contains a list of states that have passed intrastate agreements, with links to their legislation as reference.
- Model State-County Mutual Aid Deployment Contract – A model intergovernmental contract allowing for the deployment of local emergency responders under the auspices of EMAC. ("Preparedness Overview." FEMA. Visited 6/29/2013. https://www.fema.gov/national-preparedness)

You can find more information on MOUs and relevant forms at https://www.nemaweb.org/

4. **Contracts should be in place pre-disaster** for certain services – such as debris hauling, mosquito spraying, and other services needed in the immediate period post-disaster.

Why is it important to do this before disaster strikes?

Consider the fact that for Stafford Act aid (FEMA Public Assistance), an applicant (local governmental unit or eligible non-profit) must go through an open-bidding process. This is difficult to do if the disaster shuts down your electricity or floods your local government offices.

Therefore, you must:

- Identify, pre-disaster, the contractors or companies you will use for each function. Then, when disaster strikes, the contract is triggered.
- This saves time. It also demonstrates to FEMA that the contract was awarded through a competitive bidding process, and was not a "brother-in-law deal."
- Further, trying to conduct the contractor selection process post-disaster just adds to the chaos.

5. **Stand-by Contracts for Debris** –

In addition to contracting with a reputable debris hauler, local governments should have an agreement with a debris monitoring firm to observe and document debris operations from the collection point to final disposal.

The monitor ensures that hauling is done safely, efficiently, and in compliance with FEMA Public Assistance eligibility rules.

For the most accurate and efficient monitoring, select a firm that utilizes an ADMS (Automated Debris Monitoring System) instead of the antiquated paper-ticket system.

Accurate documentation of debris removal is essential to receiving full reimbursement from FEMA.

6. **FEMA Debris Management Guide**

This guide provides information on eligibility, debris management planning, debris-related contracts, debris removal monitoring, FAQ and additional source materials. ("Debris Management Guide – FEMA 325." Visited 7/12/2013. http://www.fema.gov/pdf/government/grant/pa/demagde.pdf)

7. **Emergency Management Assistance Compacts (EMACs)**

In the wake of large natural disasters, large amounts of equipment and personnel move to the affected areas. This influx of assistance is largely the result of the Emergency Management Assistance Compact (EMAC), a Congressionally-approved interstate mutual-aid agreement. The EMAC affords states providing and receiving post-disaster assistance the ability to move equipment and people across state lines rapidly by establishing systems and protocols for (1) the acceptance of out-of-state medical licenses; (2) the recovery of costs incurred by states providing assistance; (3) legal liability claims that arise from the activities of out-of-state workers; and (4) workers' compensation payments should those out-of-state workers be injured or killed while responding to the disaster.

In short, EMAC provides for "mutual assistance between states … in managing any emergency or disaster that is duly declared by the governor of the affected state(s), whether arising from natural disaster, technological hazard, man-made disaster, civil emergency aspects of resource shortages, community calamities or insurgencies."

To take effect, EMAC requires the governor of the affected state to declare a state of emergency. In incidents that do not result in emergency declarations, EMAC's authorities and protections are very limited. Many local and state governments engage private sector businesses, including law firms, for disaster response and recovery operations. These engagements take various forms, but often include establishing Memorandums of Understanding (MOUs) for resources during and after an event.

a. Reimbursement under EMACs

- The parties in an EMAC include: Requesting States, Assisting States, Resource Providers (state agencies, units of local government and other entities deployed by an Assisting State as legal agents of the state) and personnel deployed by a Resource Provider.
- The reimbursement process for the EMAC starts when deployed personnel return home and ends when a Requesting State reimburses the Assisting State. There are responsibilities during the mission such as the maintenance of documentation. Each party to the reimbursement process is dependent upon the prior party's completing its responsibilities promptly and effectively in order to complete its own role in the reimbursement process.
- Guidelines for reimbursement follow the EMAC Articles of Agreement as well as Member State and Resource Provider procedures. Certain types of costs are specified as eligible or ineligible for reimbursement. The guidelines also detail specific forms to be used and the types of documentation to be submitted with a claim for reimbursement, as well as the suggested timelines for each step of the reimbursement process.
- A properly executed Request for Assistance (REQ-A) authorizes the EMAC mission and constitutes a contract between two states.
- Upon accepting resources offered by another EMAC Member State, the Requesting State is financially obligated to reimburse the Assisting States for expenses incurred in performance of the EMAC mission. Self-dispatched resources that deploy without state authorization are not recognized under the Compact and are not eligible for reimbursement.
- Reimbursement under the Compact is not dependent upon receipt of Disaster Relief Funds that are available through the Federal Emergency Management Agency (FEMA) after the President declares a major disaster or emergency.
- The Requesting State may seek funds from FEMA or any other sources, but its obligations under EMAC law to pay for services rendered are not contingent upon receipt of said funds.

b. Member State Reimbursement Responsibilities

- EMAC Article II states that Member States should consider all available state, local, volunteer and privately owned resources when responding to an EMAC request.
- Note: It is legally advisable for each state to ascertain its statutory authority for utilizing local government, private and volunteer resources for EMAC purposes prior to deployment.
- EMAC Article III assigns each Member State the duty to formulate internal procedural plans and programs and to stand prepared to request interstate mutual aid or provide aid to other Member States. Each Member State must develop an internal process for receiving and sending assistance, including the timely preparation and review of claims for reimbursement or the donation of services.
- Article IX of the Compact provides that any state "rendering aid in another state pursuant to this compact shall be reimbursed by the party state receiving such aid for any loss or damage to or

expense incurred in the operation of any equipment and the provision of any service in answering a request for aid and for the costs incurred in connection with such requests; provided, that any aiding party state may assume in whole or in part such loss, damage, expense, or other cost, or may loan such equipment or donate such services to the receiving party state without charge or cost; and provided further, that any two or more party states may enter into supplementary agreements establishing a different allocation of costs among those states. Article VIII expenses shall not be reimbursable under this provision."

(FEMA: Emergency Management Assistance Compact, Overview for National Response Framework. Visited 8/5/2013. https://www.fema.gov/pdf/emergency/nrf/EMACoverviewForNRF.pdf)

c. Legal Issues with EMACs in Public Health Situations

Emergency declarations by governors allow them to implement the Emergency Management Assistance Compact (EMAC), a multi-state agreement that facilitates the rapid sharing of equipment, personnel and other resources among states. Although states often face situations that threaten the health of their citizens and challenge the response capabilities of their public health infrastructure, those incidents rarely rise to the level of declared emergencies, preventing state officials from availing themselves of resources that may be located just across a state line. As a result, states seek alternative methods to assist each other during public health situations that are not declared emergencies.

The use of out-of-state assets in non-emergency situations, however, is complicated by legal considerations that increase in complexity according to the level of assistance contemplated. Information sharing efforts, for example, face few legal obstacles while efforts to share equipment, use out-of-state laboratories, or utilize out-of-state doctors and nurses raise significant legal questions relating to:

- cost reimbursement;
- license and credential portability for medical or other personnel;
- liability; and
- workers compensation.

Any cross-border mutual aid agreement that envisions the fast and efficient transfer of equipment and/or personnel will require participating states to resolve conflicts or contradictions among applicable laws and regulations. To achieve this compatibility, governors should consider the following strategies:

- Assess whether the laws in their states allow for license portability from other states and consider joining existing multi-state agreements such as the Nurse Licensure Compact;
- Review their state's policies for the use of volunteer disaster workers, particularly as those policies relate to workers' compensation claims;
- Assess whether sovereign immunity, Good Samaritan laws or other statutes provide liability protections to volunteer health professionals;
- Assess whether the laws in their state effectively deal with the issue of private

health organizations' ability to credential and privilege out-of-state medical professionals and work with the private sector to develop policies and protocols to allow for the use of out-of-state professionals;

- Determine whether existing interstate agreements or arrangements address issues of cost recovery, liability, and workers compensation and whether those arrangements might be applicable to situations affecting the public health;
- Work with governors, legislators and public health officials in neighboring states to determine an appropriate strategy for aligning laws and regulations to facilitate the cross-border movement of public health professionals in non-emergencies.

C. Post-Disaster Recovery –Robert T. Stafford Disaster Relief and Emergency Assistance Act

For a good overview of the array of pre- and post-disaster programs please see "Planning and Building Livable, Safe & Sustainable Communities: The Patchwork Quilt Approach" (http://nhma.info/uploads/publications/Patchwork%20QuiltUPDATED.pdf).

These programs cover a wide range of approaches such as major federal infrastructure funding, planning and technical assistance, education and awareness programs, and disaster- related tax relief. By leveraging and coordinating these programs, a disaster-hit area can maximize access to recovery funding. Too often, opportunities are overlooked or are discovered too late in the process.

1. **FEMA's Public Assistance Grant Program** is one of the largest federal grant programs.
2. Public Assistance Grants — referred to as "PA" — provide assistance to state, tribal and local governments, and many types of private nonprofit organizations to respond to and recover from major disasters or emergencies declared by the President.
3. This program provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement or restoration of disaster- damaged, publicly owned facilities (buildings and structures, roads and bridges, water control facilities, utilities, and parks and recreation) and the facilities of certain private non-profit organizations.
4. For damaged facilities that are eligible for Public Assistance funding, FEMA may also fund mitigation measures to improve the facility's ability to resist damage in a future, similar disaster. This is referred to as "Section 406" mitigation. (Hazard Mitigation Funding Under Section 406. Visited 8/2/2013. https://www.fema.gov/95261-hazard-mitigation-funding-under-section-406-stafford-act)
5. Federal Share of Assistance – Through this program, the federal share of funding will be:

- Not less than 75% of the eligible cost for emergency measures and permanent restoration.
- The grantee (usually the state) determines how the non-federal share (up to 25%) is split with the sub-grantees, who are the eligible applicants.

6. A Public Assistance grant is triggered by Presidential declaration.

(Disaster Declarations. Visited 7/12/2013. http://www.fema.gov/disasters)

7. PA is a reimbursement process.

For this reason, project worksheets are developed for large and small projects. These worksheets must follow FEMA guidance for documenting expenses.

In a few situations, Immediate Needs Funding has been allowed when a community is financially impaired to the extent it cannot fund recovery work and wait for reimbursement.

For example, if a governmental unit uses its own labor force for some or all recovery work, a number of documentation requirements should be understood in advance of work.

- Each person who does any recovery work must be identified, along with their salary or wages, and the exact hours they worked on a given activity.
- If they used city or county machinery, the VIN number for the equipment and the exact number of hours it was used must be recorded (not the number of hours it was checked out.)

(FEMA Library.Force Account Labor Summary Record Form FF 90-123. Visited 6/29/2013. http://www.fema.gov/library/viewRecord.do?id=2729)

D. Insurance and Disaster Recovery

1. Local Business Recovery and Business Continuity Planning

Local businesses are the foundation of a community's economy, and their recovery is essential to the community's recovery. Without a plan, businesses can be cut off from supply systems, communication, facilities, and its important documents such as contracts, insurance policies, key contacts and employee information. Planning can help alleviate panic when events occur.

2. Insurance Needs of Businesses

Physical damage is only one way disaster can devastate and ultimately destroy a business.

Businesses also suffer financially when:

- Their employees cannot come to work after a disaster;
- Their customers cannot reach the premises due to infrastructure damage or order of civil authority;
- Their customer base has changed;
- They cannot open due to a disruption of essential utility services; or
- Their transactions with a critical supplier or a major customer are disrupted.

Successful recovery requires that businesses address these and other barriers.

Timely access to financial resources can help businesses address the barriers to post- disaster recovery.

Businesses are faced with many competing financial needs after a disaster:

- They may need to repair or replace damaged business property, including premises, inventory and business equipment.
- Businesses also have fixed expenses such as rent, utilities, insurance, license/permit/franchise fees, loan payments, and property taxes, which continue even if a disaster disrupts their cash flow.
- Some businesses may also want to continue to pay skilled employees who are vital to

the business and would be difficult to replace.

Businesses unable to address these needs may be forced to close, even if the business is viable in the long run.

Businesses can plan for post-disaster continuity of operations & financial needs in several ways:

- The business can purchase commercial insurance, which promises to pay the business for a covered loss in exchange for a premium.

  A line of credit arranged in advance can provide businesses with access to needed funds after a disaster.

- Some businesses mistakenly rely on federal Small Business Administration (SBA) post-disaster loans, which:
  - Must be repaid;
  - May not be available to all affected businesses; and
  - Are not available unless the President declares a federal disaster or the SBA makes an administrative disaster declaration.
- Businesses can self-insure against possible losses from disasters, relying on their own internal resources to meet post-disaster financial needs.
  - Self-insurance is most appropriate when the business can identify internal financial resources or other reliable sources of funding (line of credit, commitment to provide additional capital) for disaster losses.
  - Without secure funding sources, businesses that intentionally self-insure are in no better position after a disaster than businesses that self-insure by default. Both will be scrambling for funds after a disaster.
  - Commercial insurance can provide property coverage, automobile coverage, business interruption and extra expense coverage, workers' compensation and employee liability coverage.

("The Role of Insurance in Business Disaster Planning and Recovery." Public Entity Risk Institute Resource Library.)

Business owners and executives don't naturally see their role in a community's disaster preparedness effort.

- While local government has the legal responsibility to address disaster risks and make emergency management plans, a business owner or executive's busy schedule will dictate their minimal involvement with a business continuity plan.
- In the event of a disaster, local government cannot act alone in addressing all the needs of the community, particularly those of an economic nature, and will rely on the private sector's resources.
- Government needs the business community to be involved in planning for and responding to emergencies. For instance, businesses should:
  - Routinely back-up computers and keep backups in a safe place away from the office; for example, use cloud storage. After Katrina, manufacturing firms in New Orleans had records destroyed.

- Have insurance policies scanned and stored offsite.
- Determine how you would deal with business continuity.

Consider pandemic flu in your disaster planning.

- Incorporate appropriate actions from federal, state, and local health department plans.
- Considerations include preparing for a reduced workforce and preparing options to minimize your personnel's exposure to the public in the event of a pandemic, such as telecommuting.
- Provide training and information to your employees to reduce the risk of infection.
- Develop a sick leave policy that encourages contagious people to stay home.

This links back to individual families:

- As a representative of the Texas petrochemical industry testified, "If Mama don't come to work, our business can't function."
- In other words, if people don't have a place to live in the area, their kids can't go to school, so the city loses that tax base.
- Thriving communities know what makes them tick.
- That's why you must bring all sectors into the planning – private, non- profit, transportation, communication.

Resources for businesses:

- The Institute for Business and Home Safety's Open for Business Basic is a free guide to business continuity planning for the small to mid-sized business with 13 forms and a property protection checklist.
- The Florida Business Disaster Survival Kit was created by the Tampa Bay Regional Planning Commission to assist local business community in business continuity planning, hazards analysis and response, recovery and mitigation, and other preparedness resources.
- Ready Business was created to educate and empower individuals, small businesses and interested parties to prepare for and respond to emergencies. This resource is focused specifically on business preparedness.
- Sungard provides a number of free publications and case studies at their Knowledge Center on disaster preparation subjects such as business continuity planning, cloud computing, and data management.
- State Ready Business Programs: Be Ready Alabama; Florida Disaster; Ready Georgia; Kansas Ready; Be Ready Utah.
- Preparing Your Small Business for a Disaster lists effective emergency planning activities and provides a short, straightforward checklist, as well as a list of resources and contact information.
- SBA & Nationwide Insurance's Small Business Preparedness Guide helps business leaders better handle a disaster situation. This guide provides common-sense solutions to protect assets.
- Prepare My Business is an SBA website that provides small business resources for disaster and business continuity planning and testing, and provides free educational resources on key topics to reduce your business's risk and quickly recover following a disaster situation.

- Community Resilience and Rapid Recovery of the Business Sector by Mary Graham at Charleston Metro Chamber of Commerce provides practical ideas for how business stakeholders should play a more active role in disaster recovery planning, business continuity planning, and response at the community's emergency operations center after a disaster.
- Business Continuity Information Network is a web-based service where local businesses, county emergency management, and organizations that assist businesses can gather to share critical information and support continuity efforts before, during, and after a disaster.
- Disaster Preparation and Business Continuity Planning is a resource developed by the Central Florida Development Council that provides business continuity planning assistance, including resources on planning before, during and after a disaster.
- The State of Florida's Business Disaster Planning website will better prepare a business for future disasters by assisting them in creating a Business Disaster Plan.
- The Association of Business Contingency is the national association for business continuity professionals providing networking opportunities and a learning environment of programs, workshops and symposiums in the field of business continuity, disaster recovery, and emergency response.
- New York University's International Center for Enterprise Preparedness White Paper on business preparedness and insurance incentives.
- The Preparing a Business for a Pandemic course will assist small and medium-sized businesses in surviving a potential pandemic including the importance of business planning, communicating regularly with employees, and helping employees deal with a severe pandemic.
- Business USA provides information on a wide variety of opportunities for small business to compete for government contracts, including a list of state and federal procurement agencies, information on how to register as a contractor and bid on opportunities as well as the rules and regulations that state and federal contractors need to follow.
- Florida Atlantic University's Public Procurement Research Center provides online classes in public procurement while earning college credits at either the undergraduate or graduate level.
- Community Resilience and Rapid Recovery of the Business Sector by Mary Graham at Charleston Metro Chamber of Commerce provides practical ideas for how business stakeholders should play a more active role in disaster recovery planning, business continuity planning, and response at the community's emergency operations center after a disaster.
- Agility Recovery Solutions provides business continuity and recovery strategies, consulting services and testing options to businesses across the United States and Canada.
- National Federal of Independent Businesses (NFIB) hired the Gallup Organization in 2004 to poll small-business owners about whether specified types of natural disasters

impacted their business operations in the last few years. The findings concluded that at least 30 percent of the 750 surveyed businesses had been closed 24 hours or longer at least once within the last three years. Almost 25 percent of those that had closed their doors were due to tornadoes, hurricanes, wind storms or floods, while 20 percent were due to blizzard or extreme cold conditions. Click here for more details on the survey results.

3. Family Recovery

NWS "StormReady." The National Weather Service's "StormReady" program helps arm America's communities with the communication and safety skills needed to save lives and property – before and during the event.

StormReady helps community leaders and emergency managers strengthen local safety programs. (NWS StormReady. Visited 6/29/2013. http://www.stormready.noaa.gov.)

4. First Responders

Your community's first responders also live in the community. Therefore, they should be aware of their own risks and how to "buy risks down" through insurance.

It is important that residents are aware of the role of insurance in personal recovery.

Whether through homeowners' insurance, earthquake insurance, wind insurance, automobile or flood insurance, it is prudent to have sufficient insurance to replace property damaged or destroyed by natural hazards.

Renters have access to contents insurance, which is often overlooked. Some insurance reminders for your clients:

- Consider personal flood insurance coverage, as flooding is the most prevalent and costly hazard.
- Regular homeowners insurance doesn't cover flood damage. Even two feet of water can cause expensive damage if it enters your house. Private flood insurance is available, but the federal National Flood Insurance Program (NFIP) is more affordable and is the insurer most property owners rely on.
- Flood coverage is available for your building, its contents or both. Building coverage protects the building and utilities, including wiring and plumbing, some appliances, shelving and cabinets. Contents coverage includes most personal property, but only limited coverage for individual valuable items such as jewelry or art. The policy also pays for debris removal.
- Whether filing an insurance claim or a claim under a grant, documentation for reimbursement is extremely important.
- Take pictures of every room, or you will be scrambling for documentation. Realistically, who keeps all their receipts and credit card statements? People forget what is in their house.
- (The Red Guide to Recovery - National Edition. Resource handbook for disaster survivors. Available at http://www.theredguidetorecovery.com/the-red-guide-to- recovery.)
- Flood insurance specifically exempts the loss of money or valuable papers, property and belongings outside a building. These types of losses include fences or hot tubs, or mold damage that you could have prevented. Unlike homeowners insurance,

flood insurance doesn't pay for temporary housing while a structure is being repaired. ("What Does Flood Insurance Cover?" Sherman, Fraser. Home Guides. SFGate. Visited 6/29/2013. http://homeguides.sfgate.com/flood-insurance-cover- 6593.html.)

- Whether a structure is located inside the FEMA-mapped high risk area for flooding or not, flood insurance is available. In lower risk areas, the rates are modest, and many floods occur in previously low risk areas.

5. Mandatory Purchase of Flood Insurance

- **MANDATORY PURCHASE** – This is a requirement that the owners of structures in an area of high flood risk – special hazard flood area (SFHA) – must purchase flood insurance.
- If flood insurance is not purchased, a federal lender may not make, extend, complete or renew any loan on the property.
- Several changes to mandatory purchase requirements were made in 2012 with the Biggert-Waters Flood Insurance Reform Act, or BW12.
- The borrower has 45 days to purchase flood insurance if his flood insurance coverage has lapsed or if the property was previously in an area of low risk but is now within the SFHA.
- If the borrower does not comply, the lender must force-place insurance.
- If the property owner is in a newly mapped SFHA and wants to contest this placement, they have several options for disputing the determination. These actions must be taken within 45 days, before forced placement occurs. The property owner may:
    - Ask for review of the SFHA determination;
    - Prove the property is above the Base Flood Elevation (BFE), which is the level the waters may rise during a flood;
    - If property is above the BFE, the property owner can request a change to the flood map through a Letter of Map Amendment (LOMA).
- Even if a property is above the BFE, a lender may still require flood insurance if they deem it necessary to protect their financial risk.
- If a buyer can prove flood insurance is in place, they can obtain a refund and cancellation of force-placed insurance.("Local Links: Ground Truths for Local Leaders.") H2O Partners, Inc. Visited 6/29/2013. http://www.h2opartnersusa.com/locallinks)

E. Web Tool for Businesses

Owning or managing a business leaves little time to devote to planning ahead for a disaster that may never happen. But everything from a natural catastrophe to a power outage or storeroom flood could force a business to close its doors. And anything that disrupts operations can mean big trouble for the bottom line or competitive advantage.

Open for Business® Online is available exclusively to Insurance Institute for Business and Home Safety (IBHS) member insurance companies, their agents and policyholders. This free online program can help small business

owners keep their doors open following a natural, man-made or technological disaster, reduce the potential for loss, and recover more quickly.

Open for Business® Online provides interactive forms and organizes data into a variety of reports that ultimately produce business protection plans. Everything is stored on IBHS' secure data server and is accessible by the plan developers 24/7 via any Internet connection.

To maximize your business continuity planning efforts, utilize the optional Advanced Track documents within your Open for Business® Online plan. The information will help you prepare for even the most demanding situations, and incorporates additional core elements of emergency preparedness and business continuity planning reflected in national and international standards.

The six Advanced Track document contents enhance the existing material and further align Open for Business® with business continuity planning best practices. The Advanced Track is designed for businesses that want a more comprehensive continuity program.

("Open for Business® Online." Insurance Institute for Business and Home Safety. Visited 7/17/2013. http://www.disastersafety.org.php53-11.dfw1-2.websitetestlink.com/open-for- business/ofb-online.)

Preliminary paper and PowerPoint slides available for download at: www.h2opartnersusa.com/resources/aba-august2013