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NHMA Special Projects Business Management Plan

May 28, 2020

The Natural Hazard Mitigation Association (NHMA) is a 501 (c)3 Educational Charity and Non-Profit. The Mission, 5-year Strategic Goals and organizational information can be found [here](#). NHMA started as volunteers presenting materials that practitioners in the fields of floodplain management, hazard mitigation and climate adaptation desired to hear more about and to support local and state development of higher standards designed to reduce future disasters.

NHMA became a CTP through formal agreement with FEMA in August of 2013. Since that time NHMA has completed work on 6 grants for FYs 2012 through 2017. An enormous amount of grant support has been in the form of NHMA volunteer leverage. Over the years, the value of leverage has ranged between 4 to 10 dollars for every federal grant dollar. The major accomplishments have been the establishment of the Resilient Neighbors Network (RNN), the Disaster Risk Reduction Ambassador (DRR-A) Curriculum, numerous publications and establishing and maintaining an array of partnerships.

- The RNN was originally established with part of the 2012 grant funding and expanded and strengthened with subsequent grants. The original 10 communities are still participating along with 4 additional communities. The RNN represents communities across the nation with diverse demographics and diverse natural hazard threats and risks. The RNN/Natural Hazards Threat Risks Matrix is displayed in Figure 1.
- The DRR-A Curriculum currently includes 24 complete modules (DRR-A Curriculum Status Report follows). The curriculum started with the development of the legal concepts (liability and the takings issue) of floodplain management. These concepts were presented in lectures, publications, and workshops, starting in 2004 and later through the newly formed NHMA in 2008 and 2009. The module development was guided by extensive surveys as part of the FY 2014 CTP Grant (Understanding Lessons Learned). Most of the modules have been presented at in person workshops, conferences

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and professional meetings. Many of the presentations have been simulcast via webinars and recorded. Participant evaluations were solicited at most of the presentations, with an average approval score of 93%. To date, NHMA volunteers have made appearances in 46 of our 50 states. An informal partial list includes:

- Tulsa at a DRR-A pilot featured at a statewide workshop that included Native American tribes state officials and communities in 2015;
- Pennsylvania on multiple occasions and multiple locations;
- Utah on multiple occasions, including workshops sponsored by the state, Salt Lake City, District Attorney's Office, and others;
- New Jersey at the state floodplain management conference;
- South Carolina at a major workshop sponsored by Clemson University, the Army Corps of Engineers, the state of South Carolina and local communities;
- Maine;
- Arkansas on multiple occasions and multiple locations including presentations to the State Bar Association;
- Colorado on multiple occasions and multiple locations, including the state floodplain management conference;
- Montana on multiple occasions and multiple locations across the state including presentations to the insurance industry organization and at the state water resources conference;
- Louisiana
- NHMA has participated for several years in the Natural Hazards Workshop held in Broomfield Colorado. Participation includes at the workshop itself and through an add-on the International Practitioners Symposium.
- Major publications released over the course of grant work include:
 - [RNN Phase 1 Report](#)
 - RNN Phase 2 Report
 - RNN Phase 3 Report
 - [Disaster Risk Reduction Ambassador Curriculum](#)
 - [Understanding Lessons Learned](#)
 - [Hiding from the Wind](#)
 - [A Living Mosaic – A Path Forward](#)
 - Each grant deliverable includes RNN monthly meeting minutes, lessons learned and retreat reports, such as;
 - [Report of the Minutes and Proceedings of the Resilient Neighbors Network \(RNN\) Communities, October 2015 through December 2016.](#)
 - [Lessons Learned from Resilient Neighbors Network Communities, August 2017](#)
 - [Building Your Roadmap to a Disaster Resilient Future](#)

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- NHMA has established a wide array of associations and partnerships including:
 - **Association of State Floodplain Managers (ASFPM):** A number of NHMA members are active in ASFPM, for example: a) Tom Hughes (vice president) assisted in the review and scoring of 80 floodplain topic abstracts for the 2020 Annual Conference. Tom has participated in the state day for NHMA, usually held on a Thursday during the Annual Conference. Tom has also audited the Floodplain Managers training; b) Ed Thomas (President Emeritus and Special counsel) has worked as a volunteer for ASFPM for many years, serves as the Senior Legal advisor to the ASFPM No Adverse Impact committee and writes for and lectures at multiple ASFPM venues on the need for higher floodplain management standards, the legal aspects of NAI and related matters.
 - **Federal Alliance for Safe Homes (FLASH):** Erin Capps (president) has attended mini workshops held by FLASH in the discussion of building codes for states. FLASH remains a stakeholder with NHMA, invited to workshops and NHMA has submitted to present and discuss the DRR curriculum at resiliency conferences sponsored by FLASH.
 - **International Association of Emergency Managers (IAEM):** Erin Capps (president) remains in contact with regional leaders at IAEM for presentations on the DRR Curriculum at IAEM conferences. Prior to COVID-19, discussions were held about upcoming regional workshops and presentations.
 - **National Institute of Building Sciences (NIBS):** Ed Thomas is a member of NIBS and serves as the liaison between NIBS the Multihazard Mitigation Council and NHMA
 - **National Emergency Management Association (NEMA):** Both Jim Mullen, past NEMA president and Tom Hughes, have worked with the Hazard Mitigation Sub-Committee for several years. That Committee has now moved to the Resilience and Hazard Mitigation Committee and through Jalessa Tate, Maryland SHMO and the NEMA Director, Russ Strickland, NHMA has suggested and provided input on Hazard mitigation topics.
 - **State Hazard Mitigation Officers (SHMOs):** Tom Hughes (vice president) participated on FEMA's HMA External Stakeholder Working Group, and provided, and still provides NHMA membership, Requests for Information, and the output of this group. ESWG information is published on the NHMA website as it becomes available from the ESWG Contractor. ESWG RFIs and Outputs are passed on to all SHMOs via SHMONet.
 - **Natural Floodplain Function Alliance (NFFA):** This somewhat ad hoc initiative is chaired by ASWM & ASFPM. There is typically a group gathering at the ASFPM Annual Conference on Wednesday evening. A number of NHMA members maintain individual memberships in NFFA and participate on monthly calls as time permits.
 - **Sustainable Urban Forests Coalition (SUFC)** Ed Thomas has been in contact with SUFC about linking their educational/advocacy efforts with the DRR curriculum. Discussions ongoing.
 - **Institute for Building and Home Safety (IBHS)** Ed Thomas is currently working with the Chief Executive and an Attorney for IBHS on linking the DRR curriculum and the ABA Resilience Book materials to the IBHS ongoing efforts to promote higher standards for codes and construction. Discussions ongoing.

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- **American Meteorological Society (AMS):** Former President of AMS Bill Hook is on the NHMA Advisory Committee and as expressed interest in the DRR curriculum. Further discussions with AMF will be undertaken in the next stages of the DRR curriculum roll-out.
- **National Association of Counties (NACo):** Former NACO President Linda Langston and fellow NACO staffers have been speakers at NHMA events, and we are continuing to work with them on the roll-out of the DRR curriculum.
- **Extension Disaster Education Network (EDEN):** NHMA has been working with EDEN for years on Patchwork Quilt/roadmap to Resilience, the DRR curriculum and post event recovery materials distribution; we reconnected with the EDEN during the COVID-19 Pandemic recovery efforts. EDEN has expanded their recovery materials to assist businesses at <https://aese.psu.edu/nercrd/news/2018/extension-disaster-education-network-adds-community-development-resources>.
- **Natural Hazard Center (NHC):** Ed Thomas actively served on the NHC Advisory committee for a decade. Tom Hughes is now on the NHC Advisory Board and many members and NHMA officers have provided support via presentations, workshops, Hazard Mitigation Breakfasts and HM Trivia Nights at the annual NHC Workshop. NHMA has in the past had set-aside days for HM Topics at the same workshop. NHMA will be supporting NHC's first virtual annual workshop this year in July.
- **USACE Silver Jackets:** Ed Hecker is developing a strategy that will develop partnership objectives and activities between the NHMA RNN Program/Communities and USACE Silver Jackets program objectives at State level. This is a follow-on to the USACE/NHMA/Clemson Pilot Project for Laurens County SC. A draft White paper has been completed.
- **American Bar Association (ABA):** Several NHMA members are active in ABA, most notably Ed Thomas who chairs the Resilience Task Force of the ABA State and Local Government Section. Ed is one of three editors for the upcoming ABA Guidance on Natural Disasters, scheduled for release Fall of 2020. The ABA Resilience book Authors include several NHMA Board Members, and the book includes multiple reference to the NHMA DRR curriculum. The roll-out of the book is a splendid opportunity to introduce Attorneys and their clients to a better understanding of Hazard Mitigation/Climate Adaptation/Floodplain Management and all matters relative to Disaster Risk Reduction.
- **National Institute of Standards and Technology (NIST):** NHMA has sponsored and delivered NIST Resiliency webinars at their request and disseminates information on training sessions and webinars through NHMA outlets.
- **American Planning Association (APA):** Tom Hughes participates with the 5 local chapters in Pennsylvania and has presented twice to the PA APA Annual Conference (Reading) and the National APA Convention (Philadelphia). Shannon Burke, former NHMA Secretary, has worked for APA in Chicago.
- **Resilient Nation Partnership Network (RNPN):** NHMA as an organization is a member of RNPN. Several NHMA members have participated in past RNPN forums and events. Two NHMA members were scheduled to attend the mid-March forum that was scrubbed due to the pandemic and will participate in the rescheduled event.

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- **National Adaptation Forum:** NHMA has been represented at each one of the Forums dating back to 2013. The Forums are biennial events on odd years. NHMA has been invited to speak at several past Forums.

The stated NHMA policy is to align with and advocate for current FEMA goals, objectives, and initiatives. This includes the National Mitigation Investment Strategy (NMIS), Moonshots (flood insurance market penetration), FEMA Strategic Plan 2018-2022 and the RMD 5-year Strategy. Excerpts from these documents are appended to the end of this document. We have always tried to equip workshop participants with ideas, policies, and initiatives that they can utilize immediately.

The DRR-A Curriculum currently includes 24 modules, accessible [here](#). The 2018, 2019 and 2020 CTP Grants will be used in part to advance the Curriculum to a fully deployed **Credentialed Mitigation Professional** status. The pathway forward is divided into four categories, operationalize, RNN enhancement, create a learning environment and finally credentialing.

1. Operationalize the DRR-A Curriculum

- a. Clearly establish the outcome-oriented objectives for this initiative with input from FEMA, RNN, NHMA Board of Directors and other partners.
- b. Contract support for module updates and needed new modules as identified in the foregoing steps. Establish a schedule for future updates and method for identifying new modules. Establish target audiences, venues, and marketing.
- c. Establish a “program” with a 3-5 year plan to address a set of target audiences.
- d. Deploy the webinar platform as a vehicle to deliver Curriculum content to audiences.
- e. Also need registration, attendee tracking and post-training survey support
- f. Marketing support needed to produce flyers and so forth for NHMA, RNN and the Curriculum.
- g. Host webinars that speak to FEMA’s needs and goals, i.e. the NMIS, the FEMA Strategic Plan and RAD planning, all of which seek to motivate resilient actions at the local level.
- h. We need to review national initiatives/guidance and determine how specific modules support the objectives of those initiatives such as NMIS, BRIC etc.
- i. Host webinars based on the Curriculum modules. These can be thematically-based and focus on the RNN communities and our FEMA partners (we could introduce FEMA folks to DRR Curriculum via virtual methods).
- j. Host in-person training sessions, workshops and pilots after the pandemic is under control.
- k. The after-action effort after any webinar and in-person training should include the survey and a compilation of lessons learned/future initiatives.
- l. Pursue and leverage partnerships with Silver Jackets and the FEMA BRIC group.

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- m. Follow-up with USACE on the display and use of video capture of modules used for the SC workshop (per Ellen's note).
- n. Establish and track annual objectives and deliverables and performance standards

2. RNN Enhancement

- a. Facilitation support, use professional facilitation of the monthly calls, develop a simple RNN strategic plan that includes adding more communities and facilitating an annual meeting. The annual meeting needs to quickly morph into the NHMA signature event.
- b. Crosswalk RNN objectives/audience with RNPN, Silver Jackets and possibly CERC.
- c. Need more robust reporting of RNN meeting notes and best practices.
- d. Establish and track annual objectives and deliverables and performance standards

3. Create a learning environment

- a. Partner with a university or other learning institution. We are currently talking to David Vaughn with Clemson University.
- b. Setup a learning management system (LMS), likely after we have connected with a learning institution.
- c. Establish criteria for Curriculum instructors. The Curriculum cannot be proprietary to NHMA; however, we can set standards for instructors and the learning environment i.e. in-person training session or online training and so forth.
- d. Establish course work for basic and advanced Ambassador designation. We have discussed branding options in the past and that could be dealt with in an earlier step.
- e. Establish the testing criteria. The purpose of the DRR-A Curriculum is to deliver robust practical training with real-world applications that improves a community's resilience. The DRR Ambassadors must demonstrate their learning accomplishments through vigorous testing.
- f. Establish an effective feedback loop. This circles back to the RNN, participating communities should be encouraged to join and participate in the RNN.
- g. Establish and track annual objectives and deliverables and performance standards.

4. Credentialing

- a. Identify which route, certificate, or credentials or both.
- b. Should there be a community certificate, again circling back to the RNN? Opportunities to partner with organizations that promote, rate, or otherwise give a grade to communities based on resilience activities?
- c. Establish the credentialing board. This is a legal activity to setup the entity.

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- d. Establish the rules and standards used as a basis for credentials, disciplinary actions and so forth.
- e. Actively market the DRR credentials as worthwhile and effective.
- f. Review/examine other credentials for comparison and prescribing the value proposition for this credential (could be multiple credentials?)
- g. Establish and track annual objectives and deliverables and performance standards

Figure 1 Natural Hazard Risk Matrix

RNN COMMUNITIES Natural hazard risks that communities are expressly addressing in NHMPs and capital budgets.

	TSUNAMI	FLOODING	DROUGHT	WILDFIRE	HEAT	TORNADO	EARTHQU.	LANDSLIDE VOLCANO
Augusta GA								
Shenandoah VA								
Charlotte-Mecklenburg NC								
Greys Harbor WA								
Hillsborough Tampa FL								
Jefferson County WV								
Pasaden TX								
Rockford IL								
Tulsa OK								
Vermont								

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EXECUTIVE SUMMARY

The FEMA 2018-2022 Strategic Plan provides a framework for supporting the United States before, during, and after disasters and improving the Agency's execution of its fundamental mission of helping people. From 2018 to 2022, FEMA will focus on three main Strategic Goals and invite the whole community to adopt these shared priorities as well. FEMA will drive progress through 12 supporting Strategic Objectives. These Strategic Objectives highlight meaningful ways the Agency can focus on its workforce, simplify processes and procedures across FEMA, provide enhanced stewardship of funds, and better engage and support survivors. FEMA will develop individual strategies to help guide and shape each Strategic Objective and direct resources and funding to support these important areas.



STRATEGIC GOAL 1: BUILD A CULTURE OF PREPAREDNESS

Resilience is the backbone of emergency management. The Nation's ability to weather storms and disasters without experiencing loss significantly reduces our risk. The most successful way to achieve disaster resiliency is through preparedness, including mitigation. Building a Culture of Preparedness within our communities and our governments will support a National effort to be ready for the worst disasters – at the individual, family, community, state, local, tribal, territorial (SLTT), and Federal levels.

Strategic Goal 1 promotes the idea that everyone should be prepared when disaster strikes. To be prepared, however, we must all understand our local and community risks, reflect the diversity of those we serve, and foster partnerships that allow us to connect with a diverse Nation. People who are prepared will be able to act quickly and decisively in the face of disasters, thereby preventing death and injuries, minimizing loss of property, and allowing for a more rapid and efficient recovery.



STRATEGIC GOAL 2: READY THE NATION FOR CATASTROPHIC DISASTERS

Catastrophic disasters, including low- and no-notice incidents, can overwhelm the government at all levels and threaten National security. They are life-altering incidents for those impacted, causing a high number of fatalities and widespread destruction. Catastrophic disasters disrupt lives and hurt our communities – economically and socially. Readiness is critical for FEMA and our partners to ensure that the response and recovery missions are appropriately executed and successful.

Strategic Goal 2 builds on the preparedness through Strategic Goal 1 and focuses us on enhancing our collective readiness. The Nation's readiness depends on emergency management professionals who execute the mission on behalf of Federal and SLTT governments. This requires a scalable and capable National incident workforce that can adapt and deploy to a changing risk landscape, greater integration with our partners at all levels, and the ability to communicate and coordinate effectively in every situation.



STRATEGIC GOAL 3: REDUCE THE COMPLEXITY OF FEMA

The Nation faces an evolving threat and hazard environment. FEMA must be flexible and adaptable to meet the needs of individuals and communities, and it must deliver assistance and support in as simple a manner as possible. We must innovate and leverage new technology to reduce complexity, increase efficiency, and improve outcomes.

Strategic Goal 3 promotes simpler, less complex processes to streamline our Agency and the support we provide to individuals and communities. By making it easier for employees to do their work, the Agency can better care for those we support. A simplified FEMA – one that streamlines survivor and grantee experiences and provides straightforward processes and policies for staff – will decrease administrative burdens, improve the stewardship of Federal taxpayer dollars, and allow for a more efficient and effective execution of our mission.

Executive Summary

The National Mitigation Investment Strategy (“NMIS” or Investment Strategy) is a single national strategy for advancing mitigation investment to reduce risks posed by natural hazards (for example, sea level rise, droughts, floods, hurricanes, tornados, wildfires, earthquakes) and increasing the nation’s resilience to natural hazards. The Investment Strategy’s objective is to identify and measure the effectiveness of mitigation investments, and inform decisions on when and where to make investments. The Investment Strategy encourages the whole community—including individuals—to invest in mitigation, pre- and post-disaster, by adopting the Investment Strategy’s three shared goals. Supporting recommendations focus specifically on how the Federal Government and nonfederal partners can identify, support, influence, and align whole community mitigation investments.

The MitFLG will coordinate the Investment Strategy implementation, carried out by the whole community. The MitFLG will periodically evaluate the success of implementation efforts.

GOAL 1:

Show How Mitigation Investments Reduce Risk

The whole community will build a shared understanding of mitigation investment and its value. Specifically, the whole community will understand how effective mitigation investments can protect people, homes, neighborhoods, cultural and historic resources, ecosystems, and lifelines¹ (for example, communications, energy, transportation, and water). The Federal Government and its nonfederal partners will create a shared vocabulary and common measures to communicate information about risk and find opportunities to educate, hire, train, and develop a base of qualified mitigation professionals.

GOAL 2:

Coordinate Mitigation Investments to Reduce Risk

The whole community will coordinate mitigation investments through shared risk information, reinforced strategies for risk reduction, and easier access to existing funding. Such coordination will help the whole community justify mitigation investments and choose the most cost-effective and reasonable actions.

GOAL 3:

Make Mitigation Investment Standard Practice

The whole community will factor mitigation into investment decisions, especially for buildings and infrastructure. The Federal Government and its nonfederal partners will use and expand financial products and approaches for mitigation investment—including funding, incentives, and financial risk transfer opportunities. The Federal Government and its nonfederal partners also will make mitigation standard professional practice critical to safeguarding lifelines, services, and national safety and security.

¹ A lifeline enables the continuous operation of critical business and government functions, and it is essential to human health and safety or economic security.

5-Year Scan: “Best Case” Operating Environment

In five years...

▸ Social Vulnerability

- The NFIP is addressing affordability and offers an installment payment plan
- FEMA is equipped to address issues of social vulnerability
- We are more focused on reducing human suffering and we know how to track our own progress

▸ Government Integration

- Agencies are integrating across programs and disciplines and sharing data, best practices, and information
- Partners, private sector entities, and SLTTs have shared responsibility for mitigation and facilitate risk management
- All agencies are aligned and implementing NMIS strategies that reduce disaster suffering and we can readily expose and address gaps
- FEMA has changed fundamentally how we operate in a post-disaster environment
- RMD HQ strategic planning and project implementation are well coordinated and resourced
- We have connectivity and integration across FIMA and FEMA
- Mitigation is integrated with Response, Recovery, and Preparedness to achieve outcomes
- FEMA has a 360° view of internal and external customers

▸ Cultural Shift

- All staff have enough project management and acquisition training to participate effectively in procurement and contract management to get the performance of services we need and the outcomes we want
- We are agile in being solution-oriented
- FIMA integral operations are documented and implemented efficiently (i.e. PPBE)



FEMA



Overview of Disaster Risk Reduction (DRR) Ambassador Curriculum Modules

As of March 28, 2019

DISASTER
RISK REDUCTION
Ambassador Curriculum

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BACKGROUND

The Natural Hazard Mitigation Association (NHMA) is a national organization of practitioners committed to natural hazard disaster risk reduction (DRR) in the context of climate adaptation and mitigation. NHMA members are dedicated to helping our nation achieve the goal of reducing the devastating costs and impacts of natural hazards. Such a reduction improves public safety and health as well as community well-being, while reducing government expenditures, human misery, and environmental harm. NHMA emphasizes the whole community approach to addressing natural hazard mitigation and places a special emphasis on protecting underrepresented populations from disaster damage.

The NHMA membership has determined they can best leverage their limited resources by building a peer-to-peer network designed to encourage and promote local efforts to build a safer, more resilient future for the nation; this initiative is called the Resilient Neighbors Network (RNN). RNN leaders and others in the NHMA leadership have also recognized the need for information, knowledge of best practices, and analytic tools to enable better-informed decisions about the many facets of DRR.

With support from its membership and a Federal Emergency Management Agency (FEMA) Cooperating Technical Partners (CTP) Grant, NHMA initiated a development and review process consistent with the Department of Homeland Security (DHS) Preparedness Directorate's Office of Grants and Training Course Development Specifications. The methodology and results are described in the Final Report for FEMA CTP 2014-15 Task 3 NHMA Ambassador Curriculum available on the NHMA website. The result indicated that the NHMA DRR Ambassador Curriculum could provide effective and meaningful information, resources, and training to community staff and volunteer and stakeholder groups, essential to the vision of whole community engagement in DRR and community resilience.

In 2016, under a 2015-2016 CTP Grant, NHMA's Project Management Team inventoried its existing educational material to determine which of the essential topics were already developed and identified the gaps that would require new design and development. With contractor support for curriculum development also funded by the FEMA CTP Program, NHMA volunteer authors have produced or revised 24 modules, in the form of PowerPoint presentations with instructor notes, to fill those gaps. The modules are frequently revised to incorporate new policies, programs, and perspectives and to address the needs of specific audiences.

DRR Ambassador Curriculum modules generally are conducted by NHMA subject matter experts in workshop or webinar format in response to requests from organizations interested in specific aspects of disaster risk reduction. Since 2017 workshops or single modules have been presented to audiences of federal, state and local government practitioners across the country, and at national meetings including the National Hurricane Conference, and the American Bar Association.

NHMA's long term plans for the DRR Ambassador Curriculum include instituting a system for long-term care and maintenance of the modules, obtaining a Learning Management System to facilitate online versions of the modules, and implementation of its plans for a DRR Ambassador Certificate.

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: Stronger Codes = Stronger DRR
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
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	Earthquake Risks: From Engineering to Policy

OVERVIEW OF CURRICULUM MODULES

I. Disaster Risk Reduction for a Safe and Prosperous Future

Part I of this curriculum describes and illustrates how communities with internal leadership, support from the NHMA Resilient Neighbors Network and DRR Ambassadors, and using a systematic approach, can achieve a safe, healthy, and prosperous future by reducing disaster risks.

Module 1: Introduction to the Natural Hazard Mitigation Association and Disaster Risk Reduction Ambassador Curriculum

Author: Edward Thomas, Esq., Past President, NHMA

This module defines disaster risk reduction and introduces the NHMA. It describes NHMA local initiatives that include publications to assist communities to navigate the programs and resources for disaster risk reduction, the RNN, outreach to non-traditional DRR partners, and the DRR Ambassador Curriculum. It discusses important considerations to guide communities striving for disaster risk reduction in their community.

Learning Objectives

1. Name the local initiatives of the NHMA.
2. Summarize important considerations for approaching community DRR.
3. Identify alternatives to development practices that cause harm to individuals, businesses, the economy, and the environment.

Module 2: Introduction to Disaster Risk Reduction as a Foundation of Community Resilience

Authors: Edward Thomas, Esq., Past President, NHMA, and Erin Capps, JD, President, NHMA

This module introduces the basic concepts of community resilience, mitigation, and adaptation from a whole community perspective. It provides a rationale for disaster risk reduction as a foundation of community resilience, introducing the concept of Four Circles of Resilience and Sustainability. Module 2 also discusses trends in damages, liability, and costs of natural disasters. It includes suggested solutions, publications that promote resilience and disaster risk reduction, and important considerations for plotting a path forward toward a resilient future.

Learning Objectives

1. Define community resilience and disaster risk reduction.
2. Give examples of how mitigation and adaptation impact a community's economy, health, dignity, and safety.
3. Discuss solutions to rising disaster costs based on current development trends.

Module 3: Leadership for Disaster Risk Reduction

Authors: Donna Boyce J.D., NHMA Board Member, and, Jim Mullen, NHMA Board Member, and Principal, EM Northwest Consulting LLC

This module discusses the role of leaders/champions for DRR in the community; how to be effective change agents for DRR, leadership challenges, and best leadership practices to address them.

Learning Objectives

1. Describe the need for leadership throughout disaster risk reduction planning and implementation in a community.
2. Discuss the role of leadership in identifying key stakeholders whose support is needed for success.
3. Discuss how to approach and gain support from key stakeholders to achieve mutual interests in a safe community.

Module 4: Community Disaster Risk Reduction and Adaptation

Authors: Rebecca Joyce, NHMA Board Member, Community Program Manager, Central Shenandoah Planning District Commission; Barbara Miller, CEM, CFM, Preparedness Division Manager, JH Consulting; Timothy J. Trautman, P.E., CFM, Program Manager, Engineering & Mitigation Program, Charlotte-Mecklenburg Storm Water Services

This module discusses the concepts of whole community and climate adaptation. It provides a lens into what various communities, with unique hazards and challenges, have undertaken in order to achieve disaster risk reduction. It includes lessons learned from the RNN and the Rockefeller Foundation's 100 Resilient Cities Challenge in three different regions of the United States. The module also describes how each of the communities in these examples faces unique hazards and their own physical, social, and economic challenges, but share the common goal of reducing risk and vulnerability to become more disaster-resilient.

Learning Objectives

1. Describe the trends changing the make-up of U.S. communities.
2. Identify themes of the whole community approach.
3. Recall mitigation types and provide hazard-specific examples.
4. Recognize lessons learned from Resilient Neighbors Network (RNN) community success stories.

Module 5: Approaching the Challenge of Disaster Risk Reduction: NIST Community Resilience Guide

Author: Steve Cauffman, Research Engineer, Community Resilience Group, National Institute of Standards and Technology (NIST)

Given the unique circumstances under which community leaders pursue DRR and resilience, a systematic approach is useful. This module introduces the 2015 *NIST Community Resilience Planning Guide for Buildings and Infrastructure Systems*, which provides a practical and flexible overall approach for setting priorities and allocating resources to manage risks for various hazards.

Learning Objectives

1. Define resilience in the context of an entire community.
2. Identify the six planning steps described in the *NIST Community Resilience Planning Guide for Buildings and Infrastructure Systems*.
3. State the purpose of the *NIST Community Resilience Economic Decision Guide for Buildings and Infrastructure Systems*.

II. Forming a Community's Vision for Disaster Risk Reduction

These modules suggest and provide examples of strategies for developing and refining the community's DRR vision.

Module 6: Risk Assessment: An Asset-Based Approach

Authors: Bob Freitag, CFM, University of Washington Institute for Hazards Mitigation Planning and Research, and William John Siembieda, Ph.D., AICP, Professor, California Polytechnic State University

This module explores a risk assessment and identification approach that builds on a community's assets. This "assets-based approach" engages community stakeholders in a positive interactive experience; it encourages outcomes that embrace future visions and focus less on past conditions.

Learning Objectives

1. Differentiate between vulnerability-based and asset-based risk assessment processes.
2. Describe a process for asset-based risk assessment.
3. Apply the asset-based approach in a hypothetical community workshop.

Module 7: Achieving Community Buy-in for Disaster Risk Reduction: Win-Win Approaches

Authors: Edward Thomas, Esq., Past President, NHMA and David Mallory, PE, CFM, Treasurer, NHMA

Developing a resilient society requires a new message that promotes a "win-win" approach to development practices based on sound economic, legal, and ethical principles, protection of the environment, and involvement of all stakeholder groups. This module describes the steps to craft and sell a local resilience program designed to create a safer future in an era of climate variability and change.

Learning Objectives

1. List examples of harm prevention messages that would appeal to a variety of audiences.
2. Identify ways of "getting to yes" for safe development through principled negotiations.
3. Identify questions that help decide the best project choice to control floods or enhance water resources.
4. Identify ways to develop a well-thought-out, clear "no," to avoid adverse impacts.

Module 8: Leveraging Resources to Improve Disaster Risk Reduction

Author: Edward Thomas, Esq., Past President, NHMA and Donna Boyce, J.D., Board Member, NHMA

This module suggests a process, techniques, and strategies for cooperating and coordinating with multiple partners in a community's disaster resilient future. Steps include: envision a disaster resilient future that meets the needs of the community; develop a plan that includes taking action now to control development; obtain technical assistance and locate funding sources; continue to pursue resilience during recovery from a disaster, and learn from examples of successes achieved by a wide array of communities. NHMA's *Building Your Roadmap to a Disaster Resilient Future* is introduced as a reference for using this process.

Learning Objectives

1. Summarize the elements of a community's roadmap to a disaster resilient future.
2. Provide examples of resources to leverage for disaster risk reduction during normal times.
3. Describe how conditions, opportunities, and resources for disaster risk reduction change after a disaster.
4. Discuss options for leveraging resources in a hypothetical post-disaster community.

III. Realizable, Practical, and Affordable Approaches to Implementing the Disaster Risk Reduction Vision

Part III of the DRR Ambassador Curriculum introduces processes for developing a strategy for making the DRR vision a reality; hazard mitigation planning, code development, and resolving conflicts between development and risk reduction.

Module 9: Selecting and Implementing a Strategy for Addressing Community Disaster Risk Problems

Author: Tom Hughes, Vice President, NHMA and State Hazard Mitigation Officer, Pennsylvania Emergency Management Agency

This activity-based module discusses considerations for developing and implementing a hazard risk reduction strategy in a community affected by a disaster event.

Learning Objectives

Based on course concepts and scenario information provided:

1. Identify issues to consider in a long term disaster recovery strategy.
2. Suggest possible solutions that will reduce hazard risk in the community.

Module 10: Integrating Hazard Mitigation into Local Planning

Authors: Lawrence Frank, MRP, CFM, Resilience Program Manager, Atkins North America, and Shannon Burke, Board Member, NHMA/Manager, American Planning Association Hazard Planning Center

This module briefly reviews and provides resources for the local mitigation planning process. It discusses the benefits and provides guidance and references for integrating hazard mitigation planning into the local community's entire network of plans.

Learning Objectives

1. List references for FEMA hazard mitigation plan requirements.
2. Describe the concept of a safe growth audit and how it can be applied in the local community.
3. Describe ways to integrate hazard mitigation throughout the community's planning process.
4. List common barriers to integration of hazard mitigation in the planning process.

Module 11: Beyond Codes: Stronger Codes = Stronger DRR

Don Watson, FAIA, CIP, EarthRise design, and David Vaughn, Director of Global Engagement, Clemson University Risk Engineering and System Analytics Center

Strong building and zoning codes and mitigation best practices are needed to achieve disaster risk reduction in building and community planning. The process of code development and the relationship between FEMA guidance and local building codes and zoning practices is reviewed in this module.

Learning Objectives

1. Describe why and how zoning regulations and building codes are developed in the U.S.
2. Identify opportunities to adopt DRR best practices to strengthen local planning and building regulations.
3. Refer to building code resources for multi-hazard risk reduction.

Module 12: Creating the Plan: A Sustainable Floodplain Management Process Model

Author: Timothy J. Trautman, P.E., CFM, Program Manager, Engineering & Mitigation Program, Charlotte-Mecklenburg Storm Water Services

The Charlotte-Mecklenburg Storm Water Services (CMSWS) pioneered the "Future Conditions" approach to floodplain management, to resolve the conflict between the increased risk of flooding and the development and construction demands of a growing community. The module describes challenges and successes in achieving results.

Learning Objectives

1. Describe the decision model behind floodplain management.
2. Explain the future conditions approach to floodplain mapping.
3. Explain the strategic planning approach to flood mitigation.

IV. Resources and Tools for Community Disaster Risk Reduction

Part IV of the curriculum includes modules devoted to enabling DRR stakeholders to implement their DRR strategy effectively using science, data, the law, and other relevant resources.

Module 13: Climate and Weather Tools and Trends

Authors: Leonard Vaughan, Hydrologist, National Weather Service, Melissa Griffin, South Carolina Assistant State Climatologist, and Todd Davison, past director NOAA Gulf Coast Service Center

Climate and weather tools and trends define the challenges, needs, and opportunities for disaster risk reduction, no matter what the cause or consequences. This module addresses ways to mitigate and adapt to extreme weather impacts and risks.

Learning Objectives

1. Describe how extreme weather and other impacts of climate change are affecting humans, the built environment, and ecosystem services.
2. Access sources of information and interpretation of climate and weather-related changes and risks characteristics of regions across the US.
3. Discuss best practice examples of communities adapting to increased natural hazard risks due to more extreme weather and other impacts of climate change.

Module 14: Risk Assessment Basics

Author: Steve Pardue, Antares Planning Group, LLC and Caroline Cunningham, Stantec

Risk assessment is assisted by new decision tools and shared community assessments that help prioritize costs and benefits of DRR plans and actionable projects. This module introduces the basic concepts of risk assessment in an uncertain or changing climate. It provides resources that drill deeper into the topic.

Learning Objectives

1. Explain why risk assessment is an essential element in disaster risk reduction decision-making processes.
2. Identify the categories of risk.
3. Define risk in terms of probability, vulnerability, and value.
4. Explain the role of benefit-cost analysis (BCA) in risk assessment.

Module 15: Legal and Policy Opportunities for Disaster Risk Reduction

Author: Edward Thomas, Esq., Past President, NHMA

This module integrates engineering, planning, policy, and legal research into a fundamental message; safe development, climate adaptation, and hazard mitigation provide the most resilient path for the whole community. It provides a community development approach for hazard mitigation, floodplain management, water quality and resources, design, and construction. This module is designed to fit into the FEMA RiskMAP vision of using the National Flood Insurance Program (NFIP) as the basis of future planning and hazard mitigation.

Learning Objectives

1. Identify potential challenges or opportunities associated with the local 'legal infrastructure.'

2. State the ancient legal and equitable roots and concepts of safe or “do no harm” development decisions, including higher standards designed to protect the property and rights of everyone.
3. Explain how floodplain management, and other forms of regulation designed to prevent harm, generally avoid the “takings” issue.
4. Explain the evolving professional “Standard of Care.”
5. Identify important legal concepts discussed in this module, such as variances.

Module 16: Linking Catastrophe Insurance to Disaster Risk Reduction

Author: Nicholas Lamparelli, Co-founder and Chief Underwriting Officer, reThought Insurance, Blogger & Podcaster at InsNerds.com

This module describes the leading causes of catastrophe (CAT) losses globally, introduces the protection gap, and describes CAT models and new innovations that could solve the protection gap. The content is intended to provide community representatives with information that they can take away, evaluate, and implement in their own financial and economic practices to manage the risks in their communities.

Learning Objectives

1. State the leading causes of catastrophe (CAT) losses in the US and globally.
2. Define the “protection gap.”
3. Describe the features of CAT models and why they are important.
4. Identify business models that could be implemented to solve the protection gap.

V. Resources for Hazard-Specific Disaster Risk Reduction

Part V provides information and guidance to enable community leaders to more effectively reduce risk from specific hazards, using available tools, resources, and innovations.

Module 17: Living with Water

Author: Don Watson, FAIA, CIP, EarthRise design

“Living with Water” is an approach to coastal, riverine, and regional planning that manages water quality and quantity as a resource from sky to soil to sewer to saving to sea. These innovations address the combined risks of flood, drought, soil, and ecosystem losses, and the benefits of water and food security as a combined planning and project benefit in both inland and coastal communities.

Learning Objectives

1. Define “Living with Water” principles to reduce flood and drought risk by watershed management.
2. Describe best practices that support “Living with Water” and other disaster risk reduction goals.
3. Understand how “Living with Water” benefits begin with protection of natural water resources to reduce risks and costs of floods and droughts.

Module 18: Design for Flood Resilience: Part I: Floodplain Management and Flood Resistant Design

Author: Don Watson, FAIA, CIP, EarthRise design

This module identifies the direct and indirect risks associated with different types of flooding and reviews watersheds, floodplains, aquifers and floodways. It describes floodplain management and watershed management planning based on future conditions for disaster risk reduction, and provides examples of flood resistant design measures for buildings and infrastructure.

Learning Objectives

1. Identify the risks associated with different types of flooding.
2. Explain the advantages of watershed management based on future conditions.
3. Describe flood resistant design measures for buildings and infrastructure.

Module 19: Design for Flood Resilience: Part II: Green Infrastructure / Low Impact Development

Author: Michele Adams, P.E., Meliora Environmental Design

This module defines measures to maintain and improve healthy inland waterways and floodplains and describes how green infrastructure reduces stormwater costs and flood risk.

Learning Objectives

1. Describe how impervious surfaces alter the Hydrologic Cycle.
2. Identify design elements that are considered Low Impact Development or Green Infrastructure.

Module 20: Overcoming Impediments to Flood Resilience: Paths Forward

Author: Edward Thomas, Esq., Past President, NHMA

This module continues to explore the unrelenting increase in flood losses and examines the impact of the NFIP on flood loss reduction. It addresses the limitations of current NFIP mapping in communicating current and future flood risk and discusses the Community Rating System (CRS) and “Grandfathering” as part of a long term solution to flood loss.

Learning Objectives

1. Describe higher standards, including the CRS, as part of a long-term solution to flood loss.
2. Explain the limitations of current NFIP mapping in identifying flood risk.
3. Explain common impediments to flood resilience and suggest ways to overcome them.

Module 21: Wildfire Mitigation

Contributions from Molly Mowery, Wildfire Planning International

The Wildfire Mitigation and Wildfire-Flood Connection modules incorporate perspectives from the western U.S. and other high risk locations for insights, best practices, and creative funding solutions to encourage communities in addressing the wildfire risk, fire-flood connection, and reducing future damage.

Learning Objectives

1. Recognize science-based ignition factors that cause structures to burn.
2. Identify the causes of increasing wildfire damages.
3. Describe protective measures that mitigate wildfire risk to health, safety, and vulnerable structures.
4. Discuss how communities can better manage the built environment to reduce wildfire risk through land use and development plans.
5. Discuss opportunities for wildfire mitigation during disaster recovery.

Module 22: The Wildfire-Flood Connection

Contributions from Ryan Weiss, Public Access Specialist for the Montana Department of Natural Resources and Conservation

Learning Objectives

1. Identify conditions that contribute to post-fire flooding.
2. Give examples of the impact of flooding on the post-fire landscape.
3. Describe how to address the fire-flood connection and reduce future damages through best practices, and creative funding solutions.

Module 23: Severe Thunderstorm / Tornado Safe Rooms DRAFT

Excerpts from: *Hide from the Wind: Tornado Safe Rooms in Central Oklahoma*, NHMA 2014

This module provides insights and resources to support DRR Ambassadors in advancing cost effective changes to building codes and construction practices that can minimize impacts of severe

thunderstorms and tornadoes. It explains the economics and other benefits of mitigating against these unique hazards, based on lessons learned from severe storm events such as the tornado in Moore, Oklahoma. The module also describes the benefits of building safe rooms.

Learning Objectives

1. Discuss risk of severe thunderstorms and tornadoes including geographic probability of tornadoes.
2. Refer to references for engineering designs and construction practices of safe rooms.
3. Discuss the range of costs and tradeoffs of building and using different types of safe rooms.
4. Cite best practices and essential elements of community-based safe room programs.
5. Refer to sources of information for funding safe rooms.

Module 24: Earthquake Risk: Engineering to Policy

Based on material provided by Keith Porter, PE PhD, SPA Risk LL; Todd A. Davison, and Maria J. Vorel.

This module addresses the alignment of policy and engineering guidelines, to advance seismic resilience for both individuals and society. It presents a vision for strategic collaboration between the technical and policy worlds to better assist individuals, organizations, and communities in understanding and managing earthquake and related natural disaster risks.

Learning Objectives

1. Provide examples of the earthquake risk reduction approaches grounded in engineering and science.
2. Describe options for communities to choose how well protected they are from earthquakes and other natural hazards.
3. Discuss how to use strategic collaboration between engineering and policy disciplines to achieve earthquake risk reduction.