

Section 2. The Planning Process	2-1
2.1 Planning Process History and Overview	2-1
2.1.1 Timeline of Massachusetts Planning Efforts.....	2-1
2.1.2 State Hazard Mitigation Team	2-2
2.1.3 State Hazard Mitigation Interagency Committee.....	2-3
2.1.4 Threat Hazard Identification and Risk Assessment Committee.....	2-5
2.1.5 2010-2013 Mitigation Plan Update Schedule	2-7
2.1.6 Hazard Mitigation Planning Process 2010- 2013.....	2-8
2.1.7 2013 Enhancements	2-12
2.2 Coordination Among Agencies.....	2-14
2.3 Program Integration.....	2-16
2.3.1 Matching FEMA Assistance	2-16
2.3.2 Special Appropriations Following State Disasters.....	2-16
2.3.3 State Revolving Fund.....	2-16
2.3.4 National Flood Insurance Program	2-17
2.3.5 Massachusetts Flood Hazard Management Program	2-25
2.3.6 Executive Office of Energy and Environmental Affairs	2-25
2.3.7 Office of Coastal Zone Management	2-25
2.3.8 Massachusetts Smart Growth.....	2-27
2.3.9 MassDEP Wetlands Protection Act.....	2-27
2.3.10 Massachusetts Department of Revenue.....	2-28
2.3.11 Low Impact Development.....	2-28
2.3.12 DCR Bureau of Forest Fire Control and Forestry and the Nature Conservancy.....	2-28
2.3.13 Executive Office of Public Safety and Security—Board of Building Regulations and Standards	2-29
2.3.14 Coordinated Statewide Emergency Preparedness in Massachusetts Program	2-29
2.3.15 Massachusetts Emergency Management Agency	2-29
2.3.16 Other Programs	2-31
2.3.17 Groups, Commissions and Private Non-Profit Programs.....	2-32

TABLES

Table 2-1. State Hazard Mitigation Team Members.....	2-2
Table 2-2. 2013 State Hazard Mitigation Plan Update Schedule.....	2-7
Table 2-3. FEMA FIRM Status and Approximate Risk MAP Deliverable Schedule.....	2-19
Table 2-4. Massachusetts Participating CRS Communities.....	2-24

FIGURES

Figure 2-1. Partnerships and Stakeholders.....	2-15
Figure 2-2. FEMA Risk MAP Program Vision and Goals	2-18
Figure 2-3. Massachusetts Coastal Zone.....	2-26
Figure 2-4. StormReady Sites in Massachusetts.....	2-31

SECTION 2. THE PLANNING PROCESS

This section provides documentation of the planning process, including a chronological overview of the Commonwealth's hazard mitigation program since the late 1980s. It addresses the following:

- History and overview of statewide hazard mitigation planning process
- Coordination with state agencies
- Program integration

This section also reviews the progress and accomplishments of the Hazard Mitigation Program since 2010. Enhanced and standard plan elements are integrated throughout this section.

2.1 PLANNING PROCESS HISTORY AND OVERVIEW

2.1.1 Timeline of Massachusetts Planning Efforts

Prior to the establishment of the federal Pre-Disaster Mitigation (PDM) grant program, the Commonwealth actively pursued available hazard mitigation planning funds through the Flood Mitigation Assistance (FMA) program and the Hazard Mitigation Grant Program (HMGP). With annual FMA planning funds since 1997 and HMGP planning funds, Massachusetts has funded several mitigation plans.

The following is a brief timeline of the mitigation planning efforts for the Commonwealth of Massachusetts.

- 1986—First state “409” plan is submitted to Federal Emergency Management Agency (FEMA) Region I for review and approval.
- 1989—Commonwealth submits an update report on the state plan to FEMA Region I for review and approval.
- 1991—First HMGP mitigation projects are funded through the Commonwealth.
- 1993—Commonwealth updates and submits an update of the state “409” plan and the HMGP administration to FEMA Region I for review and approval.
- 1998—Commonwealth updates and submits an update of the state “409” plan and the HMGP administration to FEMA Region I for review and approval.
- 2000—Commonwealth updates “409” plan to include additional information from the June 1998 floods and submits plan to FEMA Region I for review and approval.
- 2002—Commonwealth retains the services of a consultant to provide assistance with updating the statewide natural hazards risk assessment and GIS hazard maps project. This extensive risk analysis became the basis for the current risk assessment, which is continually being updated by the Commonwealth.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(c)(1), which states the following:

Plan Content. To be effective the plan must include a description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.

Massachusetts Holds New England's First Mitigation Planning Workshop

In August 1998, the Commonwealth developed and hosted New England's first hazard mitigation planning workshop with funding from FEMA Region I. Titled “Community-Based Hazard Mitigation Planning: Lowering the Risks and Costs of Disaster,” this training clinic attracted over 100 planners and emergency managers from federal, state, and local governments as well as non-profit and private organizations. The meeting included distribution of a state-developed planning guide, created by the Flood Hazard Management Program of the Department of Conservation and Recreation: *Flood Hazard Mitigation Planning: A Community Guide 1997*.

- 2003—State Hazard Mitigation Team (SHMT) develops a community guidebook, *Natural Hazard Mitigation Planning: A Community Guide*, to assist in developing local and regional plans. This was the first guidance for Massachusetts’ communities with an all-hazards approach.
- 2004—Commonwealth completes first all-hazard mitigation plan and submits to FEMA Region I for review and approval.
- 2007—State Hazard Mitigation Plan (SHMP) update is developed in accordance with the requirements of 44 CFR Section 201.4. The SHMT leads the year-long update process and submits drafts for FEMA review. The 2007 plan was approved in October 2007.
- 2008—Commonwealth submits an amendment to the 2007 SHMP to include strategies for the new FEMA Severe Repetitive Loss grant program.
- 2010—Commonwealth again updates the 2007 edition for a 2010 plan. The SHMT holds a series of planning meetings to incorporate new hazards identified, information and data from local and regional mitigation plans, and an evaluation of the Commonwealth’s mitigation goals and objectives. In addition to the planning workshops, members of the SHMT worked with Geographic Information Systems (GIS) staff at Massachusetts Emergency Management Agency (MEMA) to develop an updated hazard analysis to include any new or improved data available. Every section of the document was reviewed by the SHMT and updated as appropriate.
- 2013—Commonwealth hires a consultant to complete its first effort for an enhanced hazard mitigation plan and threat hazard identification and risk assessment (THIRA). Both plans are submitted to FEMA Region I for review and approval.

2.1.2 State Hazard Mitigation Team

The Commonwealth of Massachusetts has a unique interagency cooperation in the administration and management of its statewide Hazard Mitigation Program. This program is a joint effort between the Massachusetts Department of Conservation and Recreation (DCR) and MEMA. The SHMT is co-chaired by the State Hazard Mitigation Officer at DCR and the Disaster Recovery Manager at MEMA. The SHMT consists of the staff in DCR and MEMA working full-time on hazard mitigation programs, projects, and planning, such as the National Flood Insurance Program (NFIP) and FEMA Hazard Mitigation Assistance programs including HMGP, the FMA program, the PDM program. The SHMT meets monthly to coordinate team members’ individual work assignments. The SHMT also coordinates the activities of the larger State Hazard Mitigation Interagency Committee, which is described below. SHMT members for the 2013 update are listed in Table 2-1.

WHY THIS SECTION?
This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(b), which states the following:
 Planning Process. An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.

TABLE 2-1. STATE HAZARD MITIGATION TEAM MEMBERS	
Member Position	Agency
State Hazard Mitigation Officer/State NFIP Coordinator	DCR

Mitigation Grants Manager	MEMA
Hazard Mitigation Program Manager	MEMA
State Hazard Mitigation Planner	MEMA
Deputy Director Emergency Services	MEMA
Flood Hazard Mapping Coordinator	DCR
Hazard Mitigation Project Specialist	MEMA
Hazard Mitigation Grants Coordinator	MEMA
Hazard Mitigation Contract Specialist	MEMA
Environmental Engineer	DCR

2.1.3 State Hazard Mitigation Interagency Committee

Coordination with state and federal agencies and partnering with the private sector are priorities for the SHMT. Massachusetts has had an active State Hazard Mitigation Interagency Committee (SHMIC) since its creation in 1991, following two presidential disaster declarations: Hurricane Bob in August of that year and the Halloween Storm in October. This committee, which consists of state, federal, and private sector organizations, is responsible for reviewing and approving the SHMP, as well as other duties described later in this section.

State Hazard Mitigation Interagency Committee Members

Members of the SHMIC include representatives from the SHMT, THIRA project management, and representatives from the following government agencies and private organizations:

- State agencies:
 - Board of Building Regulation & Standards
 - Department of Agricultural Resources
 - Department of Conservation and Recreation
 - Department of Environmental Protection
 - Department of Fish and Game (several Divisions)
 - Department of Public Health
 - Department of Transportation
 - Division of Capital Asset Management and Maintenance (DCAMM)
 - Emergency Support Function Team Department of Public Safety
 - Executive Office of Energy and Environmental Affairs
 - Massachusetts Board of Library Commissioners
 - Massachusetts Emergency Management Agency (several Divisions)
 - Massachusetts Historical Commission
 - Massachusetts USDA
 - Office of Coastal Zone Management
- Federal agencies:

- Federal Emergency Management Agency
- National Oceanic and Atmospheric Administration (NOAA) (new in 2013)
- Natural Resource Conservation Service
- National Weather Service
- U.S. Army Corps of Engineers, New England District
- U.S. Geologic Survey
- Other agencies (includes planning partners and stakeholders, agencies to which presentations were made, or from which information was gathered):
 - American Red Cross
 - Boston Civil Engineers (new in 2013)
 - Civil Engineers Society (new in 2013)
 - Climate Change Adaptation Workshop (new in 2013)
 - Climate Change and Coastal Hazard Committee (new in 2013)
 - Franklin Regional Council of Governments
 - Massachusetts Association of Regional Planning Agencies
 - Massachusetts Fire Chiefs Association
 - Massachusetts Geological Survey
 - Massachusetts' River Alliance (new in 2013)
 - Metro Boston Homeland Security Region (new in 2013)
 - New England Disaster Recovery Exchange
 - Northeast States Emergency Consortium
 - Salvation Army
 - State Fusion Center (new in 2013)
 - State Homeland Security Advisory Council (new in 2013)
 - University of Massachusetts (various Departments)
 - Weston Observatory at Boston College
 - Woods Hole Oceanographic Institute

State Hazard Mitigation Interagency Committee Responsibilities

SHMIC responsibilities include the review and update of the SHMP as required by the Disaster Mitigation Act of 2000 and 44 CFR, Subpart M. These activities include the following:

- Review, update, and prioritize recommendations in the SHMP.
- Develop a comprehensive strategy for the development and implementation of the Commonwealth's mitigation program.
- Establish policies consistent with the statewide mitigation goals in the SHMP.
- Review submitted project applications for the HMGP and provide recommendations for funding. Provide recommendations as needed for the FMA program and the PDM program.

- Identify additional federal, state and local funding sources for mitigation projects.
- Act as subject matter experts for hazard mitigation projects from initiation to close-out.
- Meet a minimum of once a year during non-disaster years and meet on an as-needed basis following a presidential disaster declaration.

2.1.4 Threat Hazard Identification and Risk Assessment Committee

New to the 2013 update was the THIRA Committee, which met monthly from August 2012 through January 2013. The primary focus of this Committee was the development of the Commonwealth's first THIRA document, which addressed all hazards—natural, technological, and terrorist. The THIRA development began the development of the risk assessment, which is the basis of this 2013 update.

Updated FEMA guidelines require that each state administrative agency and urban area (designated under the Urban Areas Security Initiative) receiving FEMA Preparedness Grant funding complete and submit a THIRA. To meet this new requirement, a project management team was established to develop the THIRA. Project management team members included representatives from various state offices, who also were part of the hazard mitigation plan update process:

- Commonwealth Fusion Center
- Department of Agricultural Resources
- Department of Conservation and Recreation
- Department of Environmental Protection
- Department of Fire Services
- Department of Public Health
- Department of Transportation
- Executive Office of Energy and Environmental Affairs
- Executive Office of Public Safety and Security
- Massachusetts Emergency Management Agency (several Divisions)
- Massachusetts State Police
- Metro Boston Homeland Security Region
- Regional Homeland Security Councils
- State Homeland Security Advisory Council

In addition to the above, planning team agencies represented on the THIRA Committee include, but are not limited to the following:

- American Red Cross
- Boston Regional Intelligence Center
- Department of Public Health - Emergency Preparedness/Bioterrorism Committee
- Housing & Economic Development
- Massachusetts Animal Response Team
- Massachusetts Bay Transit Authority
- Massachusetts Bureau of Animal Health

- Massachusetts Commission for Deaf and Hard of Hearing
- Massachusetts Commonwealth Fusion Center
- Massachusetts Department of Conservation and Recreation
- Massachusetts Department of Environmental Protection (MassDEP)
- Massachusetts Department of Fire Services
- Massachusetts Department of Mental Health
- Massachusetts Department of Public Education
- Massachusetts Department of Public Health
- Massachusetts Department of Transportation
- Massachusetts Division of Energy Resources
- Massachusetts Emergency Management Agency
- Massachusetts Environmental Police
- Massachusetts Executive Office of Public Safety and Security
- Massachusetts Fire Services/ Hazardous Materials Response
- Massachusetts Information Technology Division
- Massachusetts Major City Police Chiefs Association Massachusetts State Police
- Massachusetts National Guard
- Massachusetts Office of Chief Medical Examiner
- Massachusetts Office of Disability
- Massachusetts Statewide Interoperability Executive Committee
- Massport
- New England Disaster Recovery Information X-Change
- Northeast Massachusetts Emergency Medical Services (EMS) Massachusetts Voluntary Organizations Active in Disaster
- Northeast Regional Homeland Security Council
- Office of Coastal Zone Management
- Southeastern Regional Homeland Security Council
- State 911 Transportation Security Agency
- U.S. Coast Guard
- Western Homeland Security Advisory Council

The THIRA process was integrated with the hazard mitigation planning process. For the THIRA development, information was collected from representatives of approximately 50 local, regional, state, federal, private, and non-governmental agencies. In many cases, this included multiple individuals from different parts of a single agency. The process also included review of existing plans and studies, past events, and extensive regional interdisciplinary meetings. These data directly supported development of the risk assessment elements of the THIRA and consequently the SHMP, as well as other planning components such as the capabilities assessment and strategy development.

To identify the threats and hazards of concern to be addressed in the THIRA, the Commonwealth reviewed the 2010 SHMP and Comprehensive Emergency Management Plan, and interacted with the State Fusion Center for relevant hazard information. As a result of the documents reviewed, the THIRA planning process began with a designated set of 21 natural hazards, six technological hazards, and 16 terrorism hazard scenarios (see Chapter 5).

The risk assessment portion of the THIRA identifies all hazards of concern with the potential to impact the Commonwealth. The THIRA document also serves as the basis of the SHMP’s risk assessment. For the SHMP, the natural hazards were grouped together with like hazards (see Table 1.1 in Section 1).

Once the hazards were identified, a risk assessment and consequence analysis were completed for each hazard. The risk assessment weighed the hazards against the Commonwealth’s capabilities. The THIRA focuses on the state-wide homeland security enterprise to implement the 31 core capabilities described in the National Preparedness Goal. It details those preparedness elements by narrowing the focus on the existing mitigation capabilities (see Section 17 of this plan). This assessment was a component of the risk analysis, which in turn was used to assess capabilities related to the threats and hazards of concern and subsequent steps of the THIRA process. This SHMP accepts the assessment and consequence analysis completed under the THIRA for non-natural hazards. Mitigation activities associated with the non-natural hazards (in the form of enhancements to build capability to mitigate risks) are detailed under the THIRA.

For the natural hazards of concern, the risk assessment in the THIRA focused on “scenario” events, elevated to a “maximum of maximums” (worst-case scenario) severity to ascertain the Commonwealth’s level of risk. Building from that, the risk assessment for the SHMP was based on an additional process incorporating “probabilistic” and “deterministic” information (see Appendix A). In addition, the SHMP used a Comprehensive Data Management System update that incorporated data on state facilities from the Division of Capital Asset Management and Maintenance (DCAMM), as well as the general building stock provided for a Level 1 Hazus risk assessment. Descriptions of the risk assessments for each hazard are provided in individual hazard profiles (Sections 6 through 16) and Appendix A.

The THIRA process also used the System-wide Multi-hazard Risk Tool (SMRT) to quantitatively evaluate all-hazard risk for the Commonwealth. SMRT compares the risk of multiple types of hazard events across the Commonwealth. Hazard types evaluated using SMRT included human-initiated events, infrastructure failure, and natural hazards. SMRT allowed the Commonwealth to estimate the risk for each hazard and compare risk across hazards using common metrics. SMRT also assisted in identifying and prioritizing enhancements in security and readiness using risk-based decision-making and planning.

The THIRA document is classified *For Official Use Only*, therefore only portions of the document are presented in Annex 1 to this SHMP.

2.1.5 2010-2013 Mitigation Plan Update Schedule

The SHMT developed the timeline shown in Table 2-3 for the 2013 SHMP update. The SHMP update and THIRA were developed by many of the same staff and at about the same time, and information from the THIRA has been integrated into the SHMP where possible. The THIRA process is discussed in greater detail in Section 5.

TABLE 2-2. 2013 STATE HAZARD MITIGATION PLAN UPDATE SCHEDULE		
Regulation/Policy	Massachusetts Planning Step	Timeline
THIRA		

TABLE 2-2. 2013 STATE HAZARD MITIGATION PLAN UPDATE SCHEDULE		
Regulation/Policy	Massachusetts Planning Step	Timeline
FEMA Comprehensive Planning Guide (CPG) 201	Project Management Team (PMT) meetings	Weekly
	Identify threats and conduct hazard assessment and Hazard Assessment Identification	Aug 2012 – Nov 2012
	State and local capability assessment meetings	Oct 2012-Nov 2012
	State Homeland Security Advisory Council meeting to establish desired capability targets	December 2013
	Submit draft and final THIRA	January 2013
HMP Planning Process		
CFR 201.4(a)(1)-(b)	SHMIC meeting	Monthly
CFR 201.4(a)(1)-(b)	Review plan for update	Aug 2012 – June 2013
CFR 201.4(c)(7)(d)	FEMA Region I review period	July 2013 – Oct 2013
CFR 201.4(c)(7)(d)	FEMA Region I approval letter generated	Oct 2013
CFR 201.4(c)(5)(ii)-(iii)	Post final version to MEMA mitigation website and make copies available.	Oct 2013
HMP Risk Assessment and Information Update		
CFR 201.4(c)(2)(i)	Hazard identification and profiling	Aug 2012 – March 2013
CFR 201.4(c)(2)(ii)	Assessing vulnerability by jurisdiction and state facilities	Jan 2013 – April 2013
CFR 201.4(c)(2)(iii)	Estimating potential losses of jurisdiction and state facilities	Feb 2013 – April 2013
HMP Mitigation Strategy		
CFR 201.4(c)(3)(i)	Review Massachusetts' mitigation goal and determine if it remains adequate for reducing potential losses.	Jan 2013 – Feb 2013
CFR 201.4(c)(3)(ii)	Review and update existing mitigation measures and state capability	Jan 2013 – Feb 2013
CFR 201.4(c)(3)(iii)	Review, update, and evaluate current and new objectives and mitigation actions	Jan 2013 – March 2013
CFR 201.4(c)(3)(iii)	Update or add new objectives and mitigation actions	Jan 2009 – March 2013
HMP Local Mitigation Planning and Coordination		
CFR 201.4(c)(2)(i)-(iii)	Review and integrate identified hazards/risk analysis data from FEMA approved regional and local mitigation plans.	Dec 2012 – Apr 2013

2.1.6 Hazard Mitigation Planning Process 2010- 2013

The Commonwealth contracted with consulting firm Tetra Tech, Inc. for the 2013 SHMP update. At the same time, Tetra Tech worked with the Executive Office of Public Safety and Security and MEMA to develop the THIRA. The update process began with a review of the 2010 Plan Maintenance Section to determine areas on which this update would focus. FEMA's 2010 crosswalk and revisions recommended in that document were also incorporated into the update process.

As a result of the THIRA process, different elements of the plan update were initiated at different times. A kick-off meeting occurred in August 2012. In addition to telephone conferences, email exchanges and one-on-one conversations, the SHMIC met several times during this update cycle. Large-group meetings

occurred in June 2011, February 2012, August 2012, September 2012, January 2013, and February 2013. Survey deployment (discussed in Section 2.1.7 below) occurred in March 2013, hazard profile review in April 2013, plan review in May 2013, presentation of the plan for adoption in June 2013, and FEMA submission in July 2013.

Since completion of the 2010 edition of the SHMP, the SHMT and various SHMIC members completed regular reviews of the plan. These reviews began shortly after approval of the 2010 plan, and continued through adoption of the 2013 plan update. Reviews focused on different areas of the plan and included, among other areas, state and local jurisdiction strategies to determine progress and grant funding opportunities. Reviews also occurred with respect to hazards addressed in the plan as new data became available, or after a specific hazard event. Review also occurred as policies or programs were developed to determine the potential impacts from such activities, and to maintain current and consistent data to ensure that updated information was captured in this 2013 update.

A significant change for the 2013 update was the Commonwealth's choice to pursue enhanced plan status. It was determined that additional information would need to be included in the document to demonstrate the Commonwealth's efforts to integrate mitigation with other emergency management elements statewide and its "whole community" approach in these areas. Information was also incorporated so that the plan meets the standards of the Emergency Management Accreditation Program (EMAP).

The SHMT held a series of planning workshops and meetings to develop this 2013 update. A change from previous plan efforts was the formation of a project management team consisting of members of the SHMT and the Commonwealth of Massachusetts Homeland Security Division. Beginning in August 2012, the project management team (including both THIRA and SHMIC members) collected data to update hazard information for use in the risk profiles. This information was gathered from subject matter experts (including SHMIC subject matter experts), from local, state, and federal agencies, and from review of local and regional mitigation plans. Workshops were held throughout the Commonwealth to capture relevant information, which has been incorporated into both the THIRA and the SHMP update.

The project management team also met weekly from August 2012 through January 2013, when the initial draft of the THIRA document was completed. Upon completion of the THIRA, SHMIC members who were part of the THIRA project management team shifted focus solely to development of the 2013 SHMP update. After December 2012, the SHMT project management team continued weekly meetings, with the exception of a few weeks when the Commonwealth was responding to disaster events or unavailable due to previously scheduled exercises, such as the week-long FEMA training in March 2013.

The SHMIC met during a February 6, 2013 workshop to discuss the status of the 2013 process and to gain concurrence on plan sections. This day-long workshop included a status overview of the update process; a presentation of hazard maps; review and adoption of goals, objectives, and a new mission statement; review of existing mitigation actions and development of new actions; presentation of the state-agency survey; and review of grant applications and existing projects.

The committee met a final time on May 22, 2013, to discuss the plan, which had previously been presented for review and comment (the risk profiles April 11, 2013; the remainder of the plan May 10, 2013). All comments captured during the review process were discussed and incorporated as appropriate.

2013 State Hazard Mitigation Interagency Committee Review Process

For this plan update, the SHMT established a goal to facilitate a comprehensive SHMP review and update with increased collaboration of the SHMIC. Combined, these members formed the team who guided the plan's overall development and review. Review included all portions of the plan. The same members or agencies previously involved again participated in the process, but they were not assigned to specific subject-matter workgroups as was done for the 2010 update. Instead, the SHMIC members were more all-encompassing throughout the process. While each member was asked to review and provide input into the entire plan, some members also served as subject matter experts for a specific hazard. In many instances,

the area of expertise crossed over to secondary hazards. Each team member was asked to review and provide input on strategy development, including review of existing mitigation actions and goals and development of a mission statement (new for 2013). Members were also asked to provide information concerning the Commonwealth's capabilities for mitigating the impacts of the hazards of concern. Information gathered from all sources was incorporated as appropriate.

New reviewers added for this update included individuals focused on EMAP standards and elements, THIRA team/workgroup members, and increased DCAMM facilities personnel to assist with data to identify state facilities at risk. Specific areas of focus included, but were not limited to, the following:

- **Flood Related Hazards**—Review all information pertinent to flood related hazards, specifically riverine flooding, heavy rain, dam failure, and ice jams. Provide information with respect to the Severe Repetitive Loss and Repetitive Flood Claim programs, the Community Rating System program, and the current status of FEMA's Risk MAP (Risk Mapping, Assessment and Planning) project throughout the Commonwealth.
- **Coastal Related Hazards**—Review all information pertinent to coastal flood related hazards, specifically coastal storms, coastal erosion, and shoreline change.
- **Atmospheric and Winter Related Hazards**—Review all information pertinent to atmospheric and winter related hazards, specifically high winds, hurricanes, tornados, Nor'easters, severe thunderstorms, heavy snow, ice storms, and blizzards.
- **Geologic Hazards**—Review all information pertinent to geologic-related hazards, specifically earthquakes, landslides, major erosion, and tsunamis.
- **Other Natural Hazards**—Review all information pertinent to other natural hazards, specifically wildfire, urban fires, drought, and extreme temperatures
- **EMAP Accreditation**—Review plan components to assess compliance with EMAP standards and make recommendations to enhance the plan to maintain EMAP accreditation.
- **THIRA**—Review all information pertinent to all hazards of concern, specifically the non-natural hazards (included in Annex 1 to this document): hazardous materials, nuclear events, transportation accidents, terrorism, and health related events. This also included a gap analysis of the 31 core capabilities.
- **Mitigation Strategy and State Capabilities**—Review and recommend revisions to the state capabilities assessment to provide information on state and local laws and regulations that impact the hazard mitigation strategy; review mitigation actions to identify overarching issues; review hazard profiles and secondary hazard effects to identify data limitations and gaps; and develop mitigation actions to address those gaps.
- **Goals and Mission Statement**—Review and revise the plan's goals to determine consistency with the goals in local jurisdiction plans and to determine the validity of the Commonwealth's overall mitigation strategy; develop a mission statement.
- **GIS Analysis**—Work with MEMA and Tetra Tech GIS staff to develop an updated hazard analysis that includes all new or enhanced data available. Every section of the 2013 updated SHMP was reviewed by the SHMT and the SHMIC and updated as appropriate.

Updated Information

2010 U.S. Census

All demographic information in this plan is from the 2010 U.S. Census and the Massachusetts Secretary of State. Data were also captured from the Massachusetts State Data Center at the University of Massachusetts Donahue Institute. The *Massachusetts Economic Due Diligence Report* prepared by the

University of Massachusetts (2013) was also used to capture population characteristics. American Community Survey reports were used in some instances. Sources are referenced whenever utilized.

2013 Map Revisions

The map revision process took place between January and April 2013. Tetra Tech worked with MEMA staff to revise data, run analyses, and develop the map products. The team developed a map template so that all maps for this plan are consistent with maps developed by MEMA for operational and other purposes. All maps were reviewed in detail and updated where new data were available.

Evaluation of Current Mitigation Measures

The Commonwealth of Massachusetts is unique in that it holds monthly meetings with SHMT members to review potential mitigation measures, grant opportunities, and project status to ensure continued compliance with grant requirements and reporting criteria, as well as to ensure continued use of existing funds through project tracking.

During the February 6, 2013 SHMIC meeting, existing mitigation measures were discussed to determine their level of effectiveness and to begin discussions on additional mitigation actions to be added during the 2013 plan update. The newly developed state-agency survey was initially deployed to members in attendance at this session and later was emailed to other state agencies. (See Section 2.1.7 for full detail).

One-on-one interviews by the State Hazard Mitigation Planner with various state agencies also occurred to expand existing mitigation measures. The Commonwealth has developed a strategy under which the State Hazard Mitigation Planner will expand these one-on-one efforts to further increase state agency involvement and increase mitigation activities.

The February planning workshop included a review of current mitigation measures and a review of the effectiveness of previously identified mitigation measures as they integrated with previously established goals. The workshop also discussed the enhancement of the strategies in local plans, noting that jurisdictions are beginning to understand the linkage between the risk assessments providing the information necessary to develop more robust strategies and projects.

Evaluation of Mitigation Goals, Strategies and Capabilities

The SHMT held the Evaluation of Mitigation Goals, Strategies, and Actions workshop on January 25, 2013. This planning workshop included an extensive review of current mitigation strategies and actions, including an analysis of the status and effectiveness of the actions. It was determined during the workshop that the goals as written required slight modification to more accurately embrace the goal of enhanced plan status. The goals also needed to better align with FEMA's "whole community" philosophy, while continuing to support local planning goals and efforts. Recommended revisions were presented to the SHMIC during its February 6 workshop, and after some minor edits, the 2013 goals were updated and approved. Section 17 contains the updated goals.

The February 6 meeting also included a brainstorming session to set forth potential strategies and actions for the 2016 plan update. A number of new actions were also identified for the 2013 plan update, many of which will support the Commonwealth seeking enhanced plan status. The February planning workshop also included a review of current mitigation measures and a review of the effectiveness of previously identified mitigation measures as they integrated with previously established goals. The workshop also discussed the enhancement of mitigation measures in local plans, noting that jurisdictions are beginning to understand the linkage between the risk assessments providing the information necessary to develop more robust strategies and actions.

During the SHMT's meeting of March 11, 2013, a potential new method for prioritizing future mitigation actions was discussed, given the SHMT's hope to enhance stakeholder involvement. It was felt that due to each state department's own operating structure, use of FEMA's STAPLEE planning criteria (social,

technical, administrative, political, legal, economic, environmental) may not necessarily work for prioritization of efforts as a greater number of mitigation actions are developed. Therefore, a new concept for prioritization was developed, as documented in Section 17 of this update. Based on the short timeframe involved since conceptualization of the new process, it was determined that for the 2013 plan update, STAPLEE would again be applied to all strategies and actions to ensure consistency and that the priorities are sound and justifiable. Once the 2013 SHMP has been approved, MEMA will work with FEMA Region I to refine the new concept to ensure that future plan updates remain in compliance with FEMA guidelines.

The SHMIC met again on May 22, 2013 to further discuss and review mitigation actions that had previously been developed and to gather additional information with respect to new mitigation actions. That information is incorporated in Section 17. The SHMIC also provided comments and input to all sections of the plan, which have been incorporated as appropriate.

2.1.7 2013 Enhancements

Increased Stakeholder Involvement

More than 50 agencies participated in the development of the Commonwealth's THIRA. Participants provided a variety of information for the THIRA's risk assessment, which is the base of the SHMP's risk assessment. In addition to the THIRA participants, other state agencies were included for the SHMP plan update, including DCR wildfire members, who will enhance the wildfire portions of the plan, and DCR Forest Division, who will provide input and information on critical areas, endangered species, and coastal-related hazards.

An important opportunity during this update was the inclusion of recovery and mitigation roles in the new Emergency Support Function Team, which is a multi-discipline team providing subject matter expertise for the state emergency operations center. The creation of the Emergency Support Function Team is part of a reorganization at MEMA beginning in May 2012. In accordance with the National Incident Management System, Massachusetts uses the Emergency Support Function structure to implement effective emergency management. This Team is the foundation of MEMA interagency partnerships for all phases of response, planning, preparedness, recovery, and mitigation. Representatives from most state agencies and departments and the private sector are on this team and are available to work together before, during, and after disaster events. An example of such an interagency partnership occurred during the 2010 spring flood when a special partnership was formed between Home Depot, the federal/state joint field office, and North Quincy High School to work on a mitigation project called The Dawg Haus. Information is available at http://www.boston.com/yourtown/news/quincy/2010/06/who_1.html.

The State Emergency Management Strategic Plan was completed during this plan update. In accordance with the new goals in this plan, the Emergency Management Strategic Plan includes comprehensive natural hazard mitigation program elements, is consistent with this plan, and supports the implementation and ongoing maintenance of this plan.

In November 2012, MEMA added a new functional-needs planner to ensure that considerations for persons with access and functional needs will be incorporated into all plans and procedures. While this new position joined late in the planning process for the 2013 update, the position will help enhance this element for future plan editions.

The Planner is currently engaged with the following high-level state emergency planning initiatives/projects:

- Writing MEMA's Access and Functional Needs Annex (a framework for coordination and support of access and functional needs functions across state agencies and supporting organizations during emergency situations or disasters).

- Developing a MEMA-based training, targeted to local emergency management directors, on planning guidance for access and functional needs populations. The progress of this project is periodically reviewed by MEMA's Access and Functional Needs Task Force for feedback.
- Developing an access and functional needs resource guide for Massachusetts local government and emergency management directors.
- Updating the Massachusetts Radiological Emergency Response Plan, and the Nuclear Power Station Public Informational Calendars to include considerations for access and functional needs populations, and to update any outdated terminology in the documents related to access and functional needs populations.
- Consulting with project stakeholders for the following projects: the Massachusetts Statewide Evacuation Coordination Project, the Massachusetts Mass Care Regional Shelter Project, the New England Regional Catastrophic Initiative Mass Care Project, and MEMA's Public Information Dissemination Strategic Plan.

SHMT members will work with the MEMA All-hazards Planning Section to ensure these efforts are integrated to the maximum extent possible with the SHMP. Current information with respect to vulnerable populations is addressed for each hazard, and within the Commonwealth's profile (Section 4). The addition of this new position and the information that will be generated will greatly enhance this effort.

The SHMT also developed new initiatives to increase involvement, including information gathering through deploying a survey to state agencies and planning partners (discussed below), more individual, one-on-one outreach, outreach during other planning initiatives, such as the update of the state strategic plan, development of climate change reports and plans, and increased collaboration of agencies and stakeholders. SHMIC and SHMT members also coordinated with other agencies and individuals as needed; supplied relevant information on new data, studies, and reports; and assisted with strategy review and development, as incorporated into this SHMP. In addition to the recommendations made during the information-gathering stage of the planning process, all members had the opportunity to review and comment on the entire draft SHMP update as an additional layer of editing and evaluation.

State Agency Survey

A new element introduced during the 2010-2013 update was the development of a state agency survey. In an effort to further enhance stakeholder involvement at the state level, the SHMT developed a pilot survey (Appendix D), which was deployed to the following state agencies:

- Board of Building Regulation & Standards
- Dam Maintenance
- DCR Bureau of Forest Fire Control
- DCR Division of Planning and Engineering
- DCR Office of Water Resources
- Department of Environmental Protection, Bureau of Resource Protection
- Division of Agricultural Development
- Division of Capital Asset Management, Office of Facilities Management
- Division of Fisheries & Wildlife
- Massachusetts Board of Library Commissioners
- Massachusetts Department of Transportation

- Massachusetts Division of Marine Fisheries
- Massachusetts Historical Commission
- Massachusetts Water Resource Authority
- MassDEP
- Northeast States Emergency Consortium
- Office of Coastal Zone Management
- University of Massachusetts
- Weston Observatory

Nine agencies responded to the survey; eight were existing members, one was not. The survey requires input from multiple divisions within an agency, so while the responses *by agency* were limited, the actual number of *participants and departments from various agencies involved* in completing the survey is much greater. The Survey Monkey web site used to conduct the survey allowed only 10 questions. Results from the web site present only those 10 questions. A separate PDF version of the survey, which was provided to agencies as well via hard copy, contains the 15 questions that will be used for future plan updates. Survey results are provided in Appendix D.

There were several purposes to developing this survey, a primary of which was to capture information on existing mitigation efforts by agencies that are not part of the planning process and to determine if there are agencies who would like to become members of the SHMIC. Questions were also included to enhance the Commonwealth's risk assessment by gathering information about areas of concern by the state agencies. The survey asked about each agency's responsibility for emergency management as a whole, specifically mitigation planning related to services and potential funding opportunities for local communities (technical assistance); responsibilities within the state emergency operations center during activations; and responsibilities associated with recovery efforts after a disaster. The initial deployment of the survey, which occurred in February 2013, was limited so as to capture feedback on potential difficulties incurred in completing the survey, the length of time needed to complete the survey, and the range of responses received so as to ensure effectiveness of the information gathered. During future updates of the plan, this survey will be deployed to a much wider range of agencies, after recommendations for enhancements are incorporated. Information based on survey results is incorporated in specific areas of the plan as appropriate.

2.2 COORDINATION AMONG AGENCIES

The SHMIC was an active participant in the 2013 update of the SHMP. Since the previous update, there have been changes in membership to the committee, and several new agencies have elected to participate. Due to the size of the SHMIC, several forms of outreach were conducted to gain greater participation. For this update, much of the communication between members occurred via emails and telephone conference calls in addition to in-person meetings.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.5(b)(4)(ii), which states the following:

Demonstrate that the State is committed to a comprehensive mitigation program, which might include any of the following:

- A statewide program of hazard mitigation through the development of legislative initiatives, mitigation councils, formation of public/private partnerships, and/or other executive actions that promote hazard mitigation.

During the 2010-2013 update cycle, team members met regularly to provide information and updates to each section of the plan. Key partnerships and stakeholders are shown in Figure 2-1. The coordination

among agencies has significantly improved since development of the initial plan. Several agencies have hosted or submitted requests to host mitigation planning and project training workshops for state agency staff.

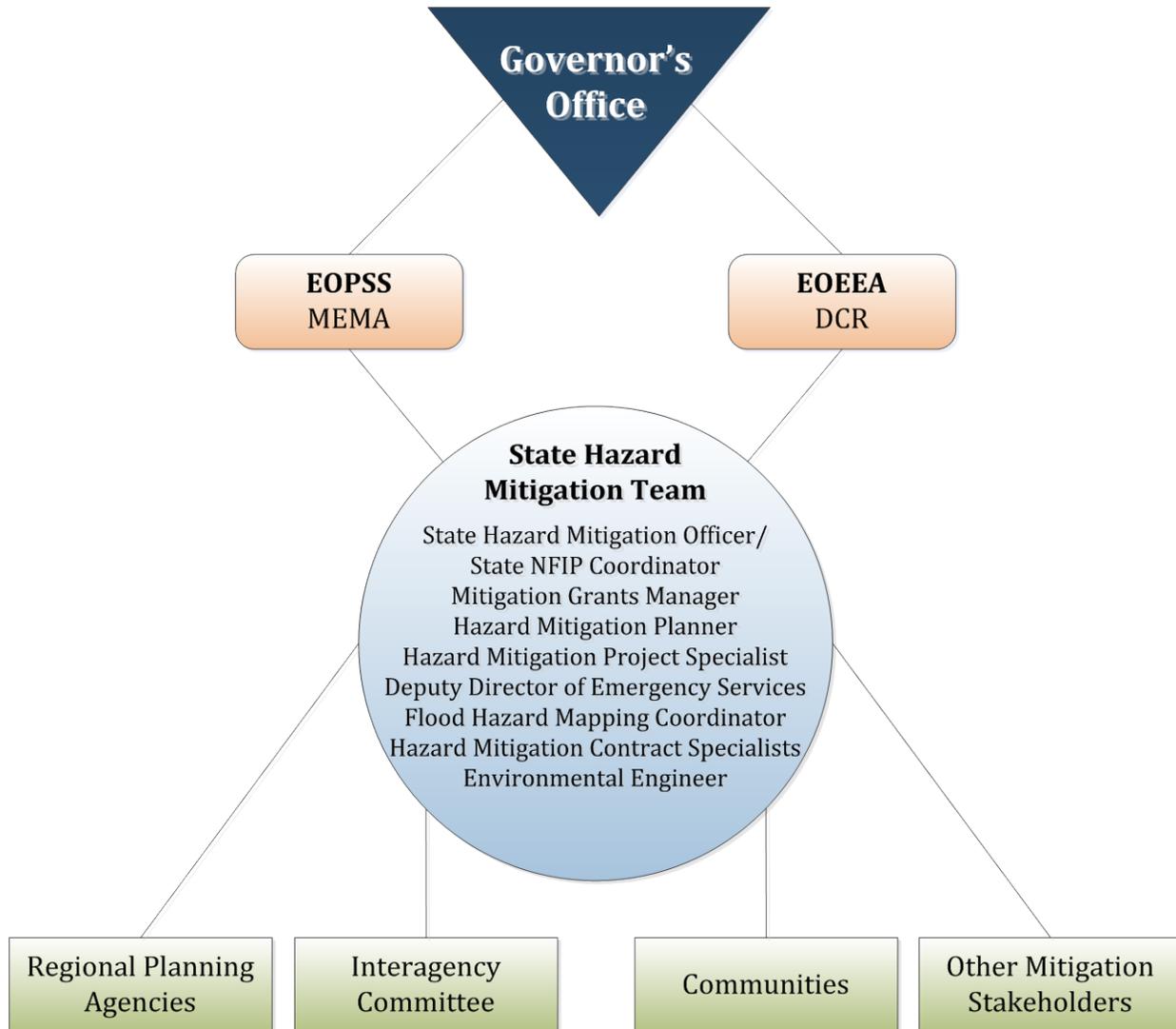


Figure 2-1. Partnerships and Stakeholders

During the time period February 1, 2010 through December 31, 2012, SHMT conducted several outreach efforts, including trainings and informational briefings related to planning and others specific to grants and projects. Section 3 presents detail on this outreach. The following are typical outreach efforts:

- Coastal Zone Management Workshop—Focus on coastal construction
- NOAA/U.S. Geological Survey Workshop—Focus on flood mapping
- Southeastern Massachusetts Building Officials Association Workshop—Focus on building codes and mapping
- Williamsburg Condominiums—Focus on insurance and mapping
- City of Fall River—Focus on base-flood elevations
- City of Cambridge—Focus on floodway requirements

- Town officials (various) and Lake Wyola Association—Focus on NFIP participation
- North Shore Task Force—Focus on use of flood insurance maps and studies
- Civil Engineers Society—Focus on mitigation planning and grant opportunities
- Climate Adaptation Workshop—Focus on mitigation planning and potential grant opportunities.

Coordination was also improved by other agencies posting and distributing mitigation opportunities and dates on their websites and newsletters. One of the questions posed in the survey administered for this update asked for information about agencies' services and technical assistance to local jurisdictions related to mitigation. Responses indicated that a wide variety of information and assistance is provided, including mapping, hazard information, studies, and reports. Additional information on the responses provided can be seen in Appendix E. This increased coordination has allowed the state to become even more resilient against natural hazards.

Interest groups at all levels of government were provided an opportunity to contribute information to this updated and to review the plan as written. The outreach period began in February 2013 with the presentation of the hazard profiles and risk maps, and continued through May 2013, with the entire plan being made available for review. Comments were solicited from several agencies during meetings and through email announcements. New to this year's review process was the development of a comment form, which more precisely tracked comments received. Once comments were received, the information was reviewed by the SHMT and incorporated as appropriate.

2.3 PROGRAM INTEGRATION

Program integration is a significant component in furthering the benefits gained of a hazard mitigation plan. The information contained in the plan can be used to support and impact policies, procedures, and programs at all levels of government. During the 2010-2013 update cycle, the Commonwealth took many steps to enhance resiliency to the hazards of concern through planning, programmatic development, funding opportunities, policies, establishing procedures, and enhancing program integration. The information provided below is a sample and not all-encompassing. Additional information concerning program integration is available in the capabilities assessment in Section 17.

2.3.1 Matching FEMA Assistance

Following presidential disaster declarations, the state may contribute half, or 12.5 percent, of the 25-percent local share of federal infrastructure support funds. Since 1991, the state has contributed more than \$27 million to match FEMA's funding following declared presidential disasters.

2.3.2 Special Appropriations Following State Disasters

Although there is no separate state disaster relief fund in Massachusetts, the state legislature will enact special appropriations for communities sustaining damage following a natural disaster that is not large enough for a presidential disaster declaration. Since 1991, Massachusetts has issued 15 state disaster declarations and has provided more than \$7 million in funding to aid communities affected by natural disasters.

2.3.3 State Revolving Fund

This statewide loan program through the Executive Office of Environmental Affairs assists communities in funding local stormwater management projects that help to minimize or eliminate flooding in poor drainage areas.

2.3.4 National Flood Insurance Program

The NFIP is a federal program, administered by FEMA, that makes flood insurance available in communities that agree to adopt floodplain management regulations that will reduce future flood damage. The program is intended to be a partnership between the federal government, states, and participating local jurisdictions. Congress created the NFIP in 1968 through the National Flood Insurance Act. The Act was passed to address the fact that homeowner's insurance does not cover flood damage, leaving much of the burden of flood recovery to general taxpayers through federal disaster relief programs. In general, flood insurance from private companies is either not available or extremely expensive. NFIP flood insurance is available anywhere (with limited exceptions, e.g., buildings entirely underground or entirely over water are not insurable) in a participating community, regardless of the flood zone. Federal law requires that flood insurance be purchased as a condition of federally insured financing used for the purchase of buildings in a special flood hazard area (SFHA), the area subject to inundation from the 1-percent-annual-chance flood (also known as the base flood or the 100-year flood).

Currently, 336 out of 351 Massachusetts communities participate in the NFIP. There are over 59,000 NFIP policies in place, with total insurance of \$14 billion. Additional information on the NFIP program, including current status of the Commonwealth's maps and the data used for the 2013 plan update, is presented in Section 17 and in the flood hazard profile.

Flood Insurance Rate Maps

FEMA produces Flood Insurance Rate Maps (FIRMs) that show SFHAs to support the NFIP. The SFHA determines where flood insurance is required as a condition of a federally insured loan through the NFIP mandatory purchase requirement. The risk zones and flood elevations shown on the FIRMs within the SFHA are used to determine flood insurance rates. The SFHA also determines where NFIP floodplain management requirements must be enforced by communities that participate in the program. These include land use and building code standards. In addition to the NFIP, the FIRMs have taken on additional uses. They are used within FEMA's Individual and Public disaster assistance programs, FEMA's mitigation grant programs, and emergency management. In Massachusetts, the FIRMs identify areas where certain State Building Code and Wetlands Protection Act regulations are enforced.

Communities and state agencies use FIRMs to meet NFIP participation requirements. In Massachusetts, the NFIP requirements are met through a series of state and local requirements. These include the State Building Code, the Wetlands Protection Act regulations, the Septic System regulations (Title V), and other locally adopted measures, most often a local floodplain zoning bylaw or ordinance. These regulations use FIRMs to determine specific requirements at a given location. Current effective FIRMs can often be viewed at local community offices. They are also available to view and purchase online at FEMA's Map Service Center website. These maps can be amended or revised to reflect existing topography or changes in flood characteristics. The Letter of Map Amendment (LOMA) process is often used to challenge a lender's determination that a building is in the floodplain.

Based on the April 30, 2013 NFIP Community Status List, the average age of effective FIRMs in Massachusetts is 10.42 years. This is significantly lower than the national average of about 25 years, which shows that the Commonwealth has been active in the new FEMA mapping initiatives.

Flood Map Modernization Program

FEMA is currently involved in an effort to modernize its inventory of FIRMs. FIRMs need to be updated for a number of reasons, including outdated base maps, development in watersheds, and advancements in flood modeling. Modernized FIRMs include an updated aerial photo base map. These maps are called Digital Flood Insurance Rate Maps (DFIRMs) because they are produced as a digital GIS-based product. The SHMT has partnered with FEMA and the DCR Flood Hazard Management Program to assist in the management and coordination of flood map modernization in Massachusetts.

Risk MAP Program

Risk Mapping, Assessment and Planning (Risk MAP) is a FEMA program that builds on the products of the Flood Map Modernization Program. FEMA began Risk MAP in 2009 with funding from the National Flood Insurance Fund and congressional appropriations for flood hazard mapping. Risk MAP integrates and aligns individual risk analysis programs into a more effective unified strategy:

“[Risk MAP] provides communities with flood information and tools they can use to enhance their mitigation plans and take action to better protect their citizens. Through more precise flood mapping products, risk assessment tools, and planning and outreach support, Risk MAP strengthens local ability to make informed decisions about reducing risk.” (FEMA, 2012).

Figure 2-2 presents the vision and goals of the program. Table 2-3 summarizes current Risk MAP status for counties in Massachusetts.

Source: FEMA, 2012

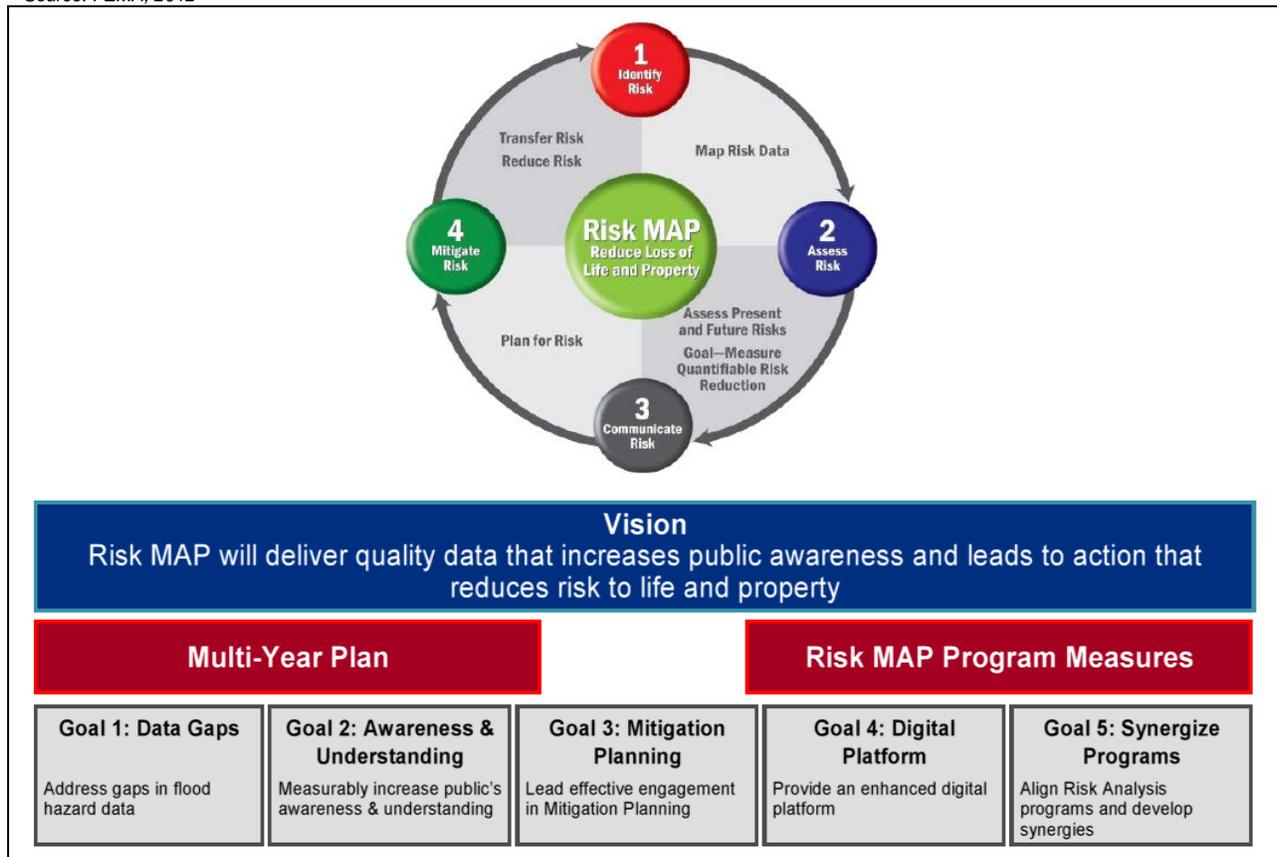


Figure 2-2. FEMA Risk MAP Program Vision and Goals

**TABLE 2-3.
FEMA FIRM STATUS AND APPROXIMATE RISK MAP DELIVERABLE SCHEDULE**

County	Current Status (December 31, 2012)	Estimated Schedule of Deliverables		Notes
		2013	2014	
Barnstable	Q3	Preliminary Maps	Effective Maps	All Barnstable County communities will get new maps. Coastal mapping update combined with first time countywide mapping.
Berkshire	Q3			
Bristol	DFIRM (July 7, 2009) *Preliminary DFIRM for Risk MAP update (12/2012) *Preliminary DFIRM for New Bedford/Fairhaven Levee: 10/2012		Effective Maps	The following communities are currently being updated: Rehoboth, Dighton, Swansea, Somerset, Seekonk, Fall River, Freetown, Berkley. Deliverable TBD The New Bedford/Fairhaven Levee has been certified. This affects the Towns of New Bedford and Fairhaven.
Dukes	DFIRM (July 6, 2010)	Preliminary Maps	Effective Maps	Entire new coastal study being performed which will impact all communities.
Essex	DFIRM (July 3, 2012)	Preliminary Maps	Effective Maps	New coastal mapping for all communities except Salisbury and Newburyport, which were already done in the 2012 mapping.
Franklin	Digital floodplain layer (1-percent flood event for Connecticut River only)			
Hampden	Revised Preliminary July 13, 2012 DFIRM	Effective Maps		
Hampshire	Q3			
Middlesex	DFIRM (June 4, 2010) *Preliminary DFIRM for Shawsheen Watershed (2011) * Preliminary DFIRM for Concord Watershed (2013)		Effective Maps	New hydraulic and hydrologic modeling and new mapping of the Concord River watershed, including the Sudbury, Assabet, and Concord Rivers. This affects the following communities: Lowell, Tewksbury, Chelmsford, Billerica, Westford, Carlisle, Bedford, Littleton, Acton, Boxborough, Concord, Lincoln, Stow, Maynard, Sudbury, Wayland, Hudson, Marlborough, Framingham, Natick, Ashland, Hopkinton, and Sherborn.
Nantucket	Preliminary DFIRM (July 26, 2012)		Effective Maps	Entire new coastal study.
Norfolk	DFIRM (July 17, 2012)	Preliminary Maps	Effective Maps	Update is only along the coast for the City of Quincy and the Town of Milton.
Plymouth	DFIRM (July 17, 2012) * Preliminary DFIRM Physical Map Revision (August 2012)	Preliminary Maps	Effective Maps	Physical Map Revision includes Towns of Marion, Mattapoisett, and Wareham. New coastal mapping for Scituate, Marshfield, Duxbury, Plymouth, and a small bit of Kingston.

County	Current Status (December 31, 2012)	Estimated Schedule of Deliverables		Notes
		2013	2014	
Suffolk	DFIRM (9/25/2009)	Preliminary Maps	Effective Maps	All new coastal modeling/mapping and that affects all 4 of the communities in Suffolk.
Worcester	DFIRM (July 4, 2011) and Q3 *Preliminary DFIRM (2013)		Effective Maps	New hydraulic and hydrologic modeling and new mapping of the Concord River watershed, including the Sudbury, Assabet, and Concord Rivers. This affects the following communities: Harvard, Bolton, Berlin, Boylston, Northborough, Southborough, Shrewsbury, Westborough, Grafton, Upton

Source: DCR (January 2013)

Risk MAP provides the data and tools that enable analysis and awareness of natural hazards. Communities can use Risk MAP data and tools to create or improve mitigation and disaster recovery plans, make informed decisions about land use and building codes, and communicate flood and other risks more effectively to citizens. This supports the nation’s comprehensive emergency management framework for natural hazards and other threats. Risk MAP ultimately supports FEMA’s priorities to strengthen the nation’s resilience to disaster and supports FEMA’s strategic priority to foster a community-oriented approach to emergency management nationally that strengthens local institutions, assets, and social networks to build sustainable and resilient communities. The implementation of Risk MAP occurs across six disciplines:

- Flood hazard mapping and engineering
- Levee strategy
- Coastal strategy
- Elevation Data
- Risk assessment
- Multi-hazard mitigation planning

Flood Hazard Mapping and Engineering

FEMA, through Risk MAP, continues to maintain the currency of the flood hazard data used in support of the NFIP. Leveraging successes from Flood Map Modernization, FEMA will continue to refresh more of the underlying engineering data depicted on the flood map. Flood Map Modernization focused on establishing a foundation for easier information depiction and distribution of the mapped flood hazard in digital format. As of November 2011, 92 percent of the nation’s population has received a DFIRM. To ensure that Flood Map Modernization’s investment is preserved and that synergies are realized, it is imperative to maintain the integrity and credibility of the underlying flood hazard data, and ensure that the information can be leveraged to improve mitigation activities beyond the minimum federal requirements for participation in the NFIP.

Risk MAP investments that are dedicated to flood hazard mapping will produce accurate flood hazard data, integrated watershed flood risk assessments, and more effective hazard mitigation plans. Risk

MAP's primary areas of focus include coastal flood hazard mapping, areas affected by levees, and significant riverine flood hazard data update needs.

The Risk MAP products suite was established to leverage the successes of Map Modernization and to further enhance the usability and value of flood hazard mapping by integrating that component with the risk assessment, mitigation planning, and risk communication processes into one seamless program. The Risk MAP products suite was augmented in 2012 to include coastal data-set products and data-set products related to dams. These new products will help communicate the flood risks associated with these high-risk, high-population impact hazards for coastal areas and rivers affected by the operation of dams.

Risk MAP products are being developed in collaboration with affected communities. FEMA's 10 regional offices throughout the United States manage the development and delivery of Risk MAP products. The first step in identifying needed Risk MAP products is to meet with representatives of state, local, and tribal entities. Such meetings are being held as Risk MAP projects are initiated. These initial discovery meetings typically cover the following topics:

- Flood risk changes over time.
- Identified watersheds FEMA will review in Risk MAP on the basis of risk, areas of significant development, and engineering and mapping needs, including:
 - State, local, and tribal inputs regarding Risk MAP project prioritization
 - Input for selected areas where updates to FEMA flood maps are ongoing within the watershed

Levee Strategy

As FEMA produced FIRMs for communities affected by levee systems, some stakeholders expressed concern about how flood risk was modeled on FIRMs when the levee is not certified and accredited. Members of both the U.S. House and U.S. Senate echoed this concern and asked the FEMA administrator to consider discontinuing the former levee analysis and mapping approach and to draw on current modeling techniques to more precisely reflect the level of flood hazard reduction that levee systems can provide, recognizing that uncertainty will remain. FEMA has proposed a cost-effective, repeatable, and flexible approach that:

- Complies with all statutory and regulatory requirements governing the NFIP, most notably 44 CFR § 65.10
- Leverages local input, knowledge, and data through proactive stakeholder engagement
- Aligns available resources for engineering analysis and mapping commensurate with the level of risk in the leveed area
- Considers the unique flooding and levee characteristics (solely from an engineering perspective) of each levee system.

FEMA coordinated with affected communities and other stakeholders in reviewing this new levee analysis and mapping approach for non-accredited levees. More information is available on FEMA's web site at: http://www.fema.gov/plan/prevent/fhm/lv_lamp.shtm.

Coastal Strategy

Throughout Flood Map Modernization, FEMA provided coastal communities with digital data in accordance with the program goals, but in almost all cases the underlying coastal flood hazard analyses were not updated. One notable exception is the post-Hurricane Katrina updates performed for Mississippi and Louisiana. The goals of the Risk MAP program extend beyond prior efforts, putting a greater focus on updating flood hazard data and engineering supporting NFIP maps and other Risk MAP products.

Given this change in focus and the limited updates performed throughout Flood Map Modernization, coastal communities will be provided with more comprehensive updates to their flood hazard data, similar to the updates following Hurricane Katrina. Additionally, affected coastal communities will be provided new Risk MAP products that increase communities' understanding of flood risk.

Throughout the Risk MAP Program, FEMA intends to update the nation's coastal Flood Insurance Studies and FIRMs and, where appropriate, establish new FIRMs in populated areas that previously had not been mapped. FEMA anticipates that it requires coastal funding through 2013 to initiate all updates. Upon initiation, coastal flood hazard and mapping updates can take three or more years of scoping, data collection, flood hazard analyses, and mapping, followed by regulatory appeal and compliance periods, during which the public has the opportunity to provide input and adopt the new maps into their local floodplain management ordinances. FEMA is identifying and prioritizing the study areas on the basis of mapping needs, flood risk, community and state cost-share, and cost efficiencies so that areas most in need are provided with updated maps as efficiently and expeditiously as possible.

Elevation Data

FEMA continues to invest in new ground elevation data as a key strategy for implementing Risk MAP. The acquisition of new elevation data has increased through coordination with the U.S. Geological Survey (USGS) and FEMA's cooperating technical partners. These strong partnerships help to increase the opportunities for the collection of new high-quality elevation data.

High-quality elevation data form the foundation for increasing the quality of the flood maps, aid in developing risk assessment data, and assist in developing actionable mitigation plans based on improved hazard data. The importance of the accuracy of elevation data for FEMA has been emphasized in two National Academies of Science reports. As a result, under the Risk MAP strategy, FEMA will obtain, and support partners' efforts to obtain, high-quality elevation data. FEMA will manage elevation data used for Risk MAP as part of its Engineering Library system that houses all supporting data used for Risk MAP.

FEMA will also continue to work with the USGS to integrate Risk MAP elevation data with other national elevation data resources to make the data more widely available and easier to use. FEMA and the USGS have memoranda of understanding in place to support this collaboration. In 2011, FEMA completed a project to reconcile the inventory of elevation data in the Engineering Library with the USGS elevation data holdings and transferred all existing elevation data from the FEMA Library to the USGS.

High-quality elevation data will increase the quality of the flood hazard maps, and the data will aid in developing risk assessment data, assist in developing actionable mitigation plans, and improve credibility, all of which help FEMA achieve its overall mission of reducing the impact of disasters. Furthermore, these data will result in a substantial increase in the public's awareness of risk—one of Risk MAP's operational goals—which in turn drives citizens to take actions toward mitigating risks. Finally, these data can be used for other purposes such as real-time flood inundation mapping to aid emergency response, water supply and quality modeling, and non-water related work such as roadway design, land use planning, communication and energy transmission line planning, and more. Because high-quality elevation data are useful in so many areas, FEMA is working with many interagency partners to maximize the use of all light detection and ranging (LIDAR) data. As a first step, FEMA is developing a policy to standardize LIDAR data collection specifications and data-sharing policies across the agency.

Risk Assessment

A risk assessment identifies hazards and their associated risks, including threats to public health and safety, the environment, property damage, and economic loss. The assessments combine the probabilities with the consequences in a way that quantifies risk. Quantifying the risk is a powerful way to communicate the threat, determine the key factors that cause it to be high, and ultimately perform trade-off analyses to determine the most effective way to reduce, avoid, or otherwise control it.

For NFIP purposes, the ability to compare flood risk across states and regions is critical. At the state and community levels, flood risk information helps community leaders with planning, evaluating costs and benefits associated with building codes, and achieving other preventive measures. An understanding of the flood risk is important to manage and mitigate risk for businesses and industries that may be located within or near the floodplain.

Through the integrated delivery of Risk MAP, one of the key data sets a given watershed will receive will be a flood risk assessment. FEMA uses the HAZUS tool for risk assessment and loss estimation. This assessment begins to quantify, in economic terms, the impact of a particular flood event. With this information available, local communities can begin to get a sense of the following:

- Economic losses to residential, commercial, and other assets within the community across a watershed
- Estimated damage to building stock
- Potential disruptions to the business community or tax base

To support Risk MAP and the development of risk assessments, FEMA is:

- Enhancing the Hazus model by developing storm surge methodology and adding a storm surge component of the hurricane module
- Leveraging NOAA's expertise in tsunami hazard identification to add a tsunami risk assessment to methodology to Hazus
- Updating the functionality and loss estimation accuracy for easier use by decision-makers and GIS users at the state, regional, and local levels so they incorporate risk assessment data into their emergency management and mitigation planning efforts

In addition, FEMA continues to provide training opportunities and communication materials on Hazus with the goals of educating new and existing Hazus users and gathering feedback on how to further improve the tool's ability to accurately assess risk and quantify losses from flood and other hazards.

Multi-Hazard Mitigation Planning

Hazard mitigation planning is the process used by state, tribal, and local governments to identify risks, assess vulnerabilities, and develop long-term strategies for protecting people, natural environment, and property from the effects of future natural hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage; and a framework for developing feasible and cost-effective mitigation actions.

In September 2011, FEMA released new mitigation plan review tools and guidance that streamline the plan review process and reinforce the emphasis on mitigation strategies, specifically actions and implementation. To support Risk MAP in achieving the overarching mitigation planning strategy and vision, this project has achieved the following goals:

- Developed a refined, strategy-focused mitigation plan review process that meets the intent of the Stafford Act and 44 CFR Part 201 by leading communities to implement action to reduce risk.
- Developed the necessary tools to support the new mitigation plan review process, and to meet stakeholder needs and create efficiencies.

FEMA developed the new process in 2011 with feedback from internal and external stakeholders, including all FEMA headquarters and regional offices, state hazard mitigation officers, local government officials, the National Emergency Management Association, the Association of State Floodplain Managers, and the National Hazard Mitigation Association.

Community Rating System Program

The CRS is a voluntary program within the NFIP that encourages floodplain management activities that exceed minimum NFIP requirements. Flood insurance premiums are discounted to reflect the reduced flood risk resulting from community actions to meet the CRS goals of reducing flood losses, facilitating accurate insurance rating and promoting awareness of flood insurance.

For participating communities, flood insurance premium rates are discounted in increments of 5 percent. For example, a Class 1 community receives a 45-percent premium discount, and a Class 9 community receives a 5-percent discount. (Class 10 communities are those that do not participate in the CRS; they receive no discount.) The CRS classes are based on 18 activities in the following categories:

- Public information
- Mapping and regulations
- Flood damage reduction
- Flood preparedness.

CRS activities can help to save lives and reduce property damage. Communities participating in the CRS represent a significant portion of the nation's flood risk; over 66 percent of the NFIP's policy base is located in these communities. Communities receiving premium discounts through the CRS range from small to large and represent a broad mixture of flood risks, including both coastal and riverine flood risks. The Insurance Services Office administers the CRS program under FEMA contract.

As of October 1, 2012, there were 17 Massachusetts communities participating in the CRS program, as listed in Table 2-4. These communities represent 24.2 percent of the flood insurance policy base in the Commonwealth. The CRS classifications range from a Class 10 (no discount) to Class 8 (10-percent discount). Four participating communities have had CRS classifications rescinded and now receive no CRS discount. The total annual flood insurance premium discount for the Commonwealth as of October 1, 2012 was \$1,499,113. This represents 2.17 percent of the total annual premium for the Commonwealth.

**TABLE 2-4.
MASSACHUSETTS PARTICIPATING CRS COMMUNITIES**

NFIP #	Community	CRS Entry Date	Current Effective Date	Current Class ^a	% Discount for SFHA	% Discount for non-SFHA	Status ^b
250286	Boston	10/1/1992	10/1/1997	10	0	0	R
250233	Braintree	10/1/1992	05/01/2008	9	5	5	C
250004	Chatham	10/1/1992	10/1/2008	8	10	5	C
250082	Gloucester	10/1/1992	10/1/1997	10	0	0	R
250008	Harwich	10/1/1995	11/1/2010	9	5	5	C
250085	Haverhill	10/1/1992	10/1/2008	9	5	5	C
250269	Hull	05/01/2008	05/01/2008	8	10	5	C
250273	Marshfield	10/1/1991	5/1/2007	8	10	5	C
250167	Northampton	5/1/2003	10/1/2010	10	0	0	R
250060	Norton	10/1/1991	10/1/2011	9	5	5	C
250010	Orleans	10/1/1993	10/1/2008	9	5	5	C
250278	Plymouth	10/1/1991	10/1/2008	9	5	5	C

**TABLE 2-4.
MASSACHUSETTS PARTICIPATING CRS COMMUNITIES**

255218	Provincetown	10/1/2011	10/1/2011	9	5	5	C
255219	Quincy	10/1/1993	10/1/2012	8	10	5	C
250282	Scituate	10/1/1991	5/01/2009	8	10	5	C
250218	Tewksbury	10/01/1993	10/01/2009	10	0	0	R
250349	Worcester	10/01/1995	10/012010	9	5	5	C

- a. Communities rated as 10 are communities that previously participated in the CRS but are currently not in the program for various reasons.
- b. Status: C = Current, R = Rescinded

2.3.5 Massachusetts Flood Hazard Management Program

The DCR Flood Hazard Management Program is the state coordinating office for the NFIP. Program staff work with FEMA and officials from NFIP-participating local communities (currently 336 of the Commonwealth's 351 communities) to implement the NFIP in Massachusetts. The Flood Hazard Management Program is a technical assistance program and has no regulatory authority, although staff does provide assistance to local communities in reviewing and developing required ordinances for NFIP compliance, as well as working with other state agencies to develop the Commonwealth's laws regulating the program (see Section 17 for detail on NFIP-related technical assistance provided). Program staff is available to provide technical assistance to all interested parties on issues such as the NFIP, floodplain management, floodplain building requirements, floodplain mapping, flood mitigation, and flood insurance.

2.3.6 Executive Office of Energy and Environmental Affairs

The Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) is the agency responsible for analysis of statewide growth and its impacts. Representatives from the EOEEA sit on the SHMIC. This agency assists communities as needed with modifications to codes and regulations.

2.3.7 Office of Coastal Zone Management

The Office for Coastal Zone Management (CZM) balances the impacts of human activity with the protection of coastal and marine resources. CZM was established to work with other state agencies, federal agencies, local governments, academic institutions, nonprofit groups, and the general public to promote sound management of the Massachusetts coast. CZM is funded primarily through the Commonwealth, NOAA, and the U.S. EPA. The CZM program consists of enforceable program policies and management principles governing activities in the Massachusetts coastal zone. The coastal zone extends from the 3-mile limit of the state territorial sea to 100 feet beyond the first major land transportation route (a road, highway, rail line, etc.), as shown on Figure 2-3. It includes all of Barnstable County, Dukes County, and Nantucket County (Cape Cod, Martha's Vineyard, Nantucket, and Gosnold), tidal rivers and adjacent uplands, and anadromous fish runs in coastal towns. The coastal zone includes all islands, transitional and intertidal areas, coastal wetlands, and beaches within the Commonwealth.

Source: <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/cstzone.html>

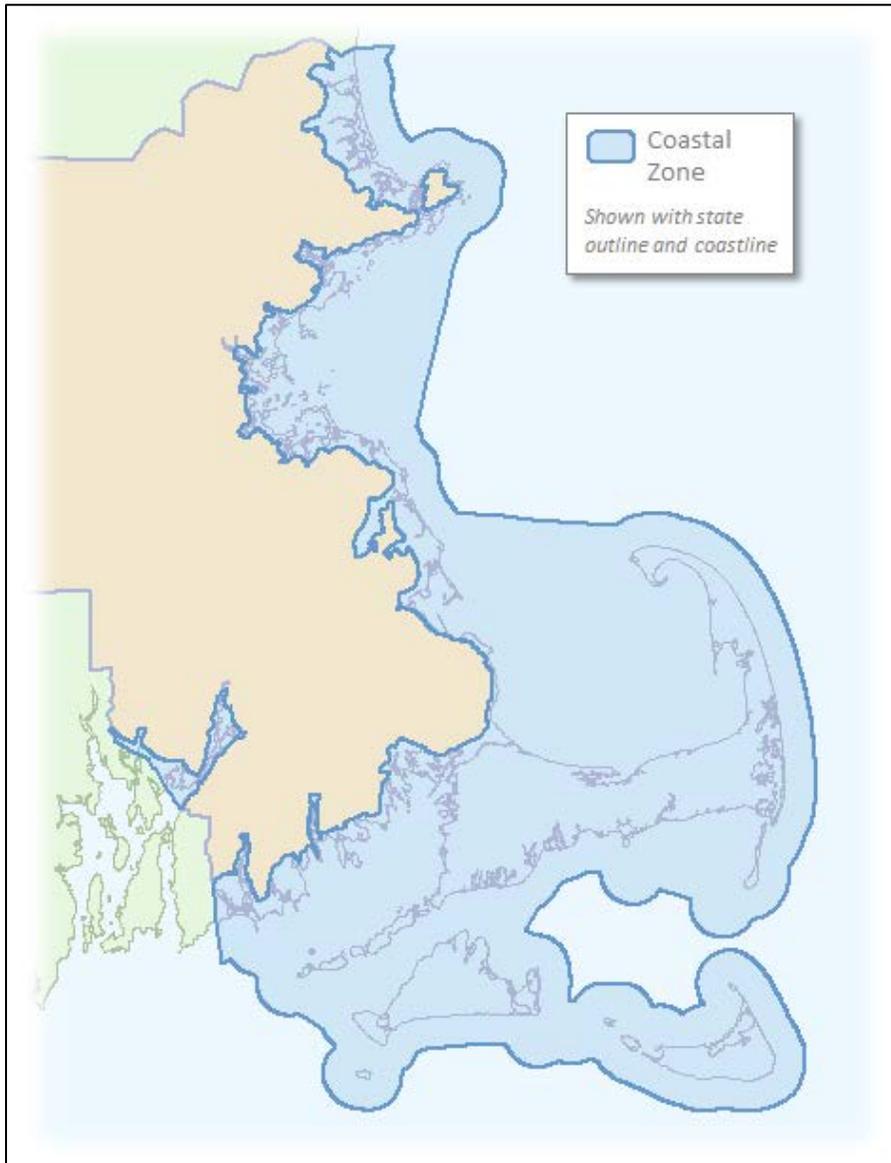


Figure 2-3. Massachusetts Coastal Zone

For planning and technical assistance coordination, the coastal communities are split among five Coastal Regions: North Shore, Boston Harbor, South Shore, South Coastal, and Cape Cod and Islands. Each area of the coast is impacted differently by each type of coastal hazard and has varying vulnerability. Additional information on the five Coastal Regions is incorporated in the coastal erosion hazard profile. Further information is at: www.mass.gov/czm/hazards/shoreline_change/shorelinechangeproject.htm.

The following are significant programs and recent projects related to CZM:

- To help coastal communities address challenges arising from storms, floods, sea level rise, and climate change, StormSmart Coasts provides a menu of options for successful coastal floodplain management. The website (<http://www.mass.gov/czm/stormsmart/index.htm>) includes regulatory tools, case studies, planning strategies, and other technical assistance materials. CZM's StormSmart Coasts program implements the [Coastal Hazards Commission](#) recommendation to establish a storm-resilient communities program to provide case studies

for effective coastal smart growth planning and implementation. This national model helps translate often overwhelming technical materials into user-friendly information for local planning efforts.

- In 2013, through collaboration with the USGS, CZM completed an update of the Massachusetts Shoreline Change Project, determining the amount of shoreline change from the mid-1800s through 2009. The USGS analyzed this latest shoreline with other shorelines at 50-meter intervals to compute long-term (approximately 150-year) and short-term (approximately 30-year) rates of shoreline change. Other shorelines added as part of this update include a 2000 shoreline derived by USGS that covers most of the ocean-facing coastline, as well as a 2001 shoreline for the South Shore that was delineated by Applied Coastal Research and Engineering. New shorelines and more than 26,000 transects with updated change rates, uncertainty values, and net distances of shoreline movement have been added to the Massachusetts Ocean Resources Information System Shoreline Change Browser.
- The CZM, in coordination with other stakeholders, updated the Massachusetts Ocean Management Plan and CZM Policy Guide, published in October 2011. The guidance includes the enforceable policies of the Ocean Plan, updates underlying legal authorities, and reinstates certain Federal Energy Regulatory Commission authorizations on the list of federal license or permit activities reviewed without prior approval. One of the primary established policies of the CZM, effective as of October 4, 2011, is to: “Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean” (CZM, 2011).
- The CZM provides an inventory of public seawalls and other structures (available at: http://www.mass.gov/czm/stormsmart/mitigation/infrastructure_reports.htm), prepared by the CZM in conjunction with DCR. This report includes the condition ratings and estimated repair or reconstruction costs for publically owned seawalls, revetments, groins, jetties and other structures. Resources such as this assist impacted communities in determining potential grant projects, providing excellent information on which to make decisions of whether to pursue a grant for such a project, and also providing information for incorporation into the actual grant application.

Additional information concerning the CZM is available in Section 17.

2.3.8 Massachusetts Smart Growth

As part of the Commonwealth’s efforts to support smart growth, the Community Preservation Act (CPA) was enacted on September 14, 2000 (Chapter 267 of the Acts of 2000); it has since been amended five times for further enhancements. The CPA allows communities to create a local Community Preservation Fund to raise money through a surcharge of up to 3 percent of the real estate tax levy on real property for open space protection, historic preservation, and the provision of affordable housing. The act also creates a significant state matching fund, which serves as an incentive to communities to pass the CPA. These principles require communities to incorporate mitigation by protecting, among other things, critical areas and encourage development in areas outside hazard areas or to standards that reduce vulnerability to hazards. Further information on the CPA is available in Section 4.

2.3.9 MassDEP Wetlands Protection Act

Wetlands are protected from development by the state Wetlands Protection Act and, in some cases, by local wetlands protection bylaws. Freshwater wetlands support high biodiversity, including unique plant communities and many animal species that are dependent on wetlands for various life-cycle needs. Wetlands also capture heavy rains and prevent flooding downstream, absorb greenhouse gases from the

atmosphere, and store and purify groundwater. MassDEP provides support to mitigation efforts through permitting, regulatory, and funding opportunities. Wetland resource areas include both inland and coastal wetlands. Coastal wetlands include coastal beaches, dunes, barrier beaches, banks, and salt marshes. These are protected under the Massachusetts Wetlands Protection Act, in part for their ability to provide storm damage protection and flood control.

2.3.10 Massachusetts Department of Revenue

The Massachusetts Department of Revenue requires all communities to value all property each year. Every third year a complete recertification is required. Both a recertification and an interim-year adjustment (the two years in between the triennial recertification) include a detailed analysis of sales data as a basis for adjusting the property values. The goal is to keep the values as close as possible to 100 percent of market value and avoid an excessive swing in assessments in one year. This type of data can assist in the calculation of losses at both the local and state levels.

2.3.11 Low Impact Development

Development based on conventional zoning in Massachusetts often results in sprawl, with associated large impervious areas, loss of natural resources, increase in nonpoint source pollution, and alteration of hydrologic systems. Conventional developments often start with clearing and leveling of the entire parcel. The construction of wide, paved roads and large parking lots follows. These impervious areas eliminate vegetation (nature's natural pollution filters) and prevent water from infiltrating into the ground (which normally replenishes groundwater that supports nearby wetlands and streams). The result is the conveying of polluted runoff to water bodies. In order to deal with stormwater that runs off these sites, structural controls such as catch basins, pipes and detention ponds are used. Instead of "greenscapes," conventional landscaping of these developments brings additional concerns, including the introduction of non-native plants, use of herbicides, pesticides and fertilizers, and excessive water consumption.

In an effort to stimulate more robust low-impact development trends throughout the Commonwealth, DCR works with local jurisdictions to promote better land use trends. A recent example of this is the Pinehills, Plymouth Suburban project. When completed in 2014, the Pinehills development will comprise nearly 3,000 homes, 1.3 million square feet of commercial space, four golf courses, and significant areas of protected open space. The project was planned as an open-space mixed-used development, a special floating zone passed by Plymouth town meeting as an alternative to the standard subdivisions that dominate the region. The project is a multi-year collaboration between the town of Plymouth, state and local officials, and the developers. Pinehills serves as an example of compact design, reduction of impervious surfaces, water conservation, wastewater reuse, and historic preservation. The project partners are Wallace Associates LLC; New England Development of Newton; and managing partner Tony Green and The Green Company. In 2003, it won top honors from the National Association of Home Builders for Best Master-Planned Community in the Nation. In 2005 it was recognized for Best Smart Growth Community (EOEEA, 2013). Information on this and similar projects is available at:

www.mass.gov/dcr/watersupply/ipswichriver/demo-projects.htm

2.3.12 DCR Bureau of Forest Fire Control and Forestry and the Nature Conservancy

The Massachusetts DCR Bureau of Forest Fire Control and Forestry works with local communities to address wildfire issues. For example, the Bureau joined forces with The Nature Conservancy to prevent wildfires from burning out of control through the Southeast Massachusetts Hazardous Fuels Mitigation and Ecosystem Restoration Project, which was developed with a \$1.97 million stimulus grant to provide prescribed and mechanical fire treatments to 1,000 acres in the southeastern part of the Commonwealth, which contains highly flammable vegetation. The region is the second most volatile area in the country.

Additional information on the project is available at: <http://www.mass.gov/recovery/see-the-impact/stimulus-stories/preventing-wildfires.html>

2.3.13 Executive Office of Public Safety and Security—Board of Building Regulations and Standards

The Board of Building Regulations and Standards is an 11-member board that derives its authority to adopt regulations, administer provisions of the state building code, and operate various construction related programs from Massachusetts General Laws Chapter 143, Sections 93 through 100. Members of the Board were part of the SHMIC for the 2013 plan update, providing input to various elements of the plan. During 2010, DCR staff worked with the Board to develop the 8th Edition of the Massachusetts State Building Code. The updated ordinance more closely mirrors the I-Codes, and more accurately reflects Massachusetts permitting procedures. The 8th Edition also reflects the strict standards for development within coastal dunes. The 8th Edition of the Massachusetts State Building Code consists of both International Building Code and International Residential Code, with Massachusetts amendments to reflect stricter state standards that exceed the NFIP minimum requirements.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.5(b)(4)(iv), which states the following:

Demonstrate that the State is committed to a comprehensive mitigation program, which might include any of the following:

- To the extent allowed by State law, the State requires or encourages local governments to use a current version of a nationally applicable model building code or standard that addresses natural hazards as a basis for design and construction of State sponsored mitigation projects.

2.3.14 Coordinated Statewide Emergency Preparedness in Massachusetts Program

The Coordinated Statewide Emergency Preparedness in Massachusetts program (COSTEP-MA) promotes proactive steps to reduce losses from natural hazards, especially flooding or water damage following fires, through cooperative, team-building activities in communities and through educational activities within the cultural heritage and emergency management communities. COSTEP-MA has developed an annex to the Massachusetts Comprehensive Emergency Management Plan and promotes education and cooperation in communities to enhance the protection of cultural resources from natural disasters.

The preservation of historic and cultural resources must be carefully considered in order to protect the character of the region's city, town, and village centers. Many colonial era residences, mill structures, and village greens are already protected to some extent through the establishment of historic districts; however, additional consideration should be given to protecting such resources from potential natural hazards. Historic inventories and plans are essential in guiding historic preservation initiatives, and such plans should consider hazard mitigation. Effective preservation of these resources requires active stewardship and support of the overall community. COSTEP-MA works with communities in protecting these invaluable resources.

2.3.15 Massachusetts Emergency Management Agency

The Civil Defense Act of 1950 authorized the creation of the Massachusetts Civil Defense Agency (predecessor to MEMA) and the development of a statewide civil defense program. Massachusetts Executive Orders 144 and 242 amended and updated the Civil Defense Act of 1950 by creating the position of Secretary of Public Safety, coordinating emergency preparedness activities and promulgating a state Comprehensive Emergency Response Plan. Combined, these executive orders delineate the need for a comprehensive emergency management program administered by the Commonwealth, and authorized the creation of local organizations for emergency management in the political subdivisions of the Commonwealth. Emergency management is defined as the preparation for and the carrying out of all

emergency functions—to mitigate, prepare for, respond to, recover from, and prevent emergencies and disasters, including natural, human-caused, and technological hazards. The THIRA and SHMP’s risk assessments indicate all hazards to which the Commonwealth and its jurisdictions are susceptible; completion of these risk assessments will contribute significant information to be used in all of FEMA’s emergency management mission areas.

Alert and Warning

MEMA and many partner organizations and agencies, including the National Weather Service, FEMA, and the American Red Cross, use multiple methods to get information and alerts out to the public before and during emergencies. In addition to traditional media, Emergency Alert System, and weather radios, other new tools are being used. These include social media, smartphone apps, wireless emergency alerts on cellphones, websites, etc. The goal of these methods is an enhanced capacity to alert the public so that more people get the information and so that people hear messages from multiple methods to help them stay safe during emergencies.

National Weather Service StormReady Program

An estimated 90 percent of all federally declared disasters are weather-related, leading to around 500 deaths per year and nearly \$14 billion in damage (NWS, 2013). 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 two land-falling deadly hurricanes. This is on top of winter storms, intense summer heat, high winds, wildfires, and other deadly weather impacts.

The National Weather Service created the StormReady program to help communities become more resilient to the impacts of these weather events. The StormReady Program helps arm America’s communities with the communication and safety skills needed to save lives and property before and during extreme weather events. StormReady helps community leaders and emergency managers strengthen local safety programs. StormReady communities are better prepared to save lives from severe weather through advanced planning, education and awareness.

Currently, there are 16 StormReady sites in the Commonwealth of Massachusetts (see Figure 2-4): 11 communities (Agawam, Belmont, Boston, Braintree, Carver, Mansfield, Scituate, Shrewsbury, Southborough, Southwick, and Worcester), one commercial site (Six Flags), three universities (Boston College, Boston, and Harvard Universities), and one military site (Natick Soldier Systems Center).

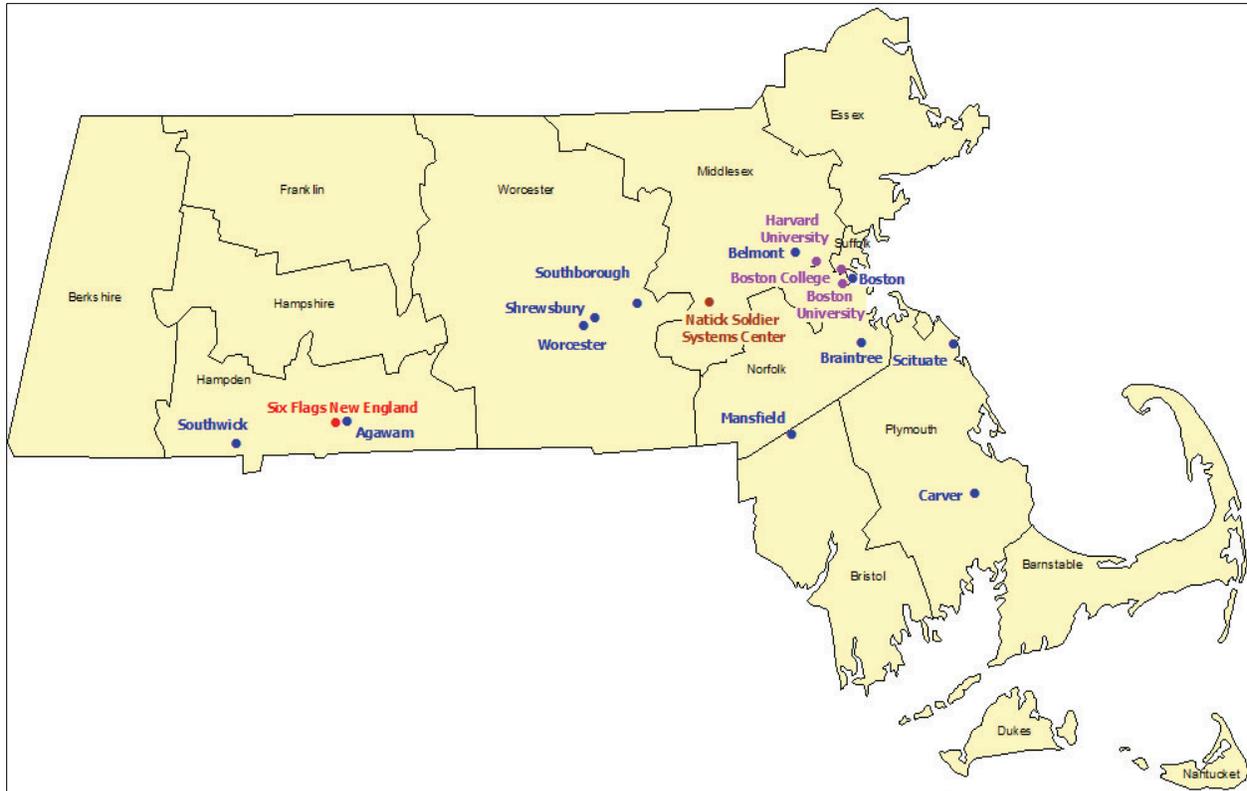


Figure 2-4. StormReady Sites in Massachusetts

Emergency Management Accreditation Program

Planning initiatives in Massachusetts are enhanced through the Commonwealth's participation in the Emergency Management Accreditation Program. EMAP is a voluntary assessment and accreditation process for government emergency management programs. It includes the following:

- A structure for identifying areas in need of improvement
- A methodology for strategic planning and justification for resources
- A catalyst for improved interoperability and professionalism
- Strengthened state, territorial, and local preparedness, including sharing of best practices.

EMAP uses national emergency management standards along with peer assessment teams to evaluate a program's activities—not just an agency, but a jurisdiction's entire program. The Commonwealth gained conditional EMAP accreditation on October 29, 2012.

2.3.16 Other Programs

The Commonwealth continues to make efforts to integrate mitigation to the greatest extent possible with other statewide planning and regulatory initiatives. For this plan update, the SHMT consulted with several ongoing planning initiatives in an attempt to integrate hazard mitigation beyond the programs described above. Additional initiatives, plans, programs and/or departments include:

- Partnerships with academic institutions to provide studies and supporting hazard information.
- Massachusetts Climate Protection Plan
- Massachusetts Drought Management Plan

- Coastal Hazards Commission Recommendations.

2.3.17 Groups, Commissions and Private Non-Profit Programs

Beyond the customary governmental departments and agencies, the SHMT has identified additional opportunities with which to integrate mitigation actions. Members of the SHMT participate in numerous programs across the Commonwealth related to hazard mitigation. The following list is a demonstration of those organizations, but is not a complete list:

- Association of State Floodplain Managers
- Climate Change Adaptation Advisory Committee
- Community Assistance Program-State Support Services Element National Policy Group
- Council of State Archivists Emergency Planning Committee
- International Emergency Management Working Group
- Massachusetts Coastal Hazards Commission
- Massachusetts Emergency Management Team
- Massachusetts Emergency Management Directors Advisor Committee
- Massachusetts GIS Advisory Council
- Massachusetts Public Private Workgroup
- Muddy River Technical Advisory Committee
- National Emergency Management Association
- Technical Advisory Committee for Coastal Construction and Environmental Issues
- Civil Engineers Society (new 2013 plan)
- Old Boston Statehouse (new 2013 plan)
- Massachusetts Water Resource (new 2013 plan)
- Coastal Zone Management Workgroup (new 2013 plan)
- Southeastern Massachusetts Building Officials Association (new 2013 plan)
- North Shore Task Force (new 2013 plan).