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SECTION 17. STATEWIDE MITIGATION STRATEGY AND PROGRAM MANAGEMENT CAPABILITY

17.1 COMPREHENSIVE MITIGATION PROGRAM

The Mitigation Mission Statement and the Mitigation Goals serve as the framework for future mitigation funding and project decisions. They shape the long-term strategy of the Commonwealth of Massachusetts for hazard mitigation and assist in the development of a comprehensive program. The prioritization of local project requests and statewide initiatives will be representative of this strategy. The mitigation strategy will serve as the blueprint for reducing losses associated with the hazards of concern and their associated risks.

In order to develop a comprehensive hazard mitigation strategy for the future, the Commonwealth must analyze current programs, strategies, and public policies that address the impacts of natural hazards. The Commonwealth can then determine the gaps in protection and incorporate appropriate solutions into this SHMP. It can also provide out-of-the-box ideas and solutions that will further enhance the Commonwealth's resiliency. This section provides an overview of Massachusetts' current programs, policies, and agencies that address natural hazards through hazard mitigation, followed by an overview of commonly used hazard mitigation measures in Massachusetts. These programs form the basis for Massachusetts' recommended hazard mitigation goals and actions and potential resources to accomplish the identified actions.

Significant focus was placed on this section for the 2013 update, with a new mission statement being developed. The update also included a comprehensive review of hazard mitigation goals, a review of existing mitigation actions and development of new mitigation actions. The funding source matrix was enhanced to demonstrate a broader list of potential funding opportunities for both the Commonwealth and local jurisdictions. Enhanced and standard plan elements have been integrated throughout this section.

17.2 MITIGATION MISSION STATEMENT, GOALS AND ACTIONS

This section provides a list of Massachusetts' goals and the actions necessary to implement a comprehensive hazard mitigation strategy over the next three years. These statewide goals and actions are based on data provided in the previous sections of the SHMP, principally the risk and vulnerability assessments. The content of the 2013 SHMP is governed, in part, by rules drawn from the DMA 2000. Strategic planning elements included in the 2013 SHMP, such as the mission, goals, and mitigation actions, represent a direction-setting framework that considers both short-term and long-term outcomes. Massachusetts' comprehensive mitigation program consists of a combination of actions taken by multiple stakeholders over time, including the following:

- Legislative mandates for state and local agencies to undertake some form of mitigation activity (defined within the capability assessment)
- Governor's executive orders requiring state agencies to work with each other
- Updating of risk assessments
- Structural and non-structural mitigation actions taken by state and local agencies
- Regional agency coordination (regional planning commissions)

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(c)(3), which states the following:

Plan Content. To be effective the plan must include a Mitigation Strategy that provides the State's blueprint for reducing the losses identified in the risk assessment.

A sustained effort is being made to build on this framework by re-examining goals, priorities, and action programs. New challenges include implementation of a system for expanding the use of GIS through enhanced data sets (updated DCAMM data; development of a landslide database); systematically measuring mitigation progress through, among other alternatives, the inclusion of a loss avoidance study; expanding public/private sector mitigation communications and knowledge sharing, and integrating land use mitigation with other types of mitigation efforts on a statewide basis.

17.2.1 Mission Statement

It was determined for this update that a mission statement providing a guiding principle for development of the hazard mitigation plan would help to focus the 2013 plan and the mitigation program as a whole. The SHMT developed the following mission statement in January 2013:

Through partnerships, reduce the statewide loss of life, property, economy, infrastructure, and cultural resources from disasters through development of a comprehensive hazard mitigation program, which involves planning, awareness, coordination, project development, and implementation.

17.2.2 Goals Update

For this plan update, the SHMT held a workshop on February 6, 2013, to evaluate mitigation goals and actions. The SHMT and SHMIC reviewed the 2010 statewide goals and actions for relevance, effectiveness and validity. The goals were also compared to goals used in local jurisdiction plans, as discussed in Section 3. It was determined that the 2010 goals were sufficient, but that, because the Commonwealth is seeking enhanced status and in order to more consistently match most of the local plans' goals, a broader set of goals for the SHMP would more accurately reflect the Commonwealth's intent. The SHMT used the following as a basis to develop its goals and mitigation actions:

- The goals will be used as general guidelines that explain what the Commonwealth wants to achieve.
- The goals will be broad statements, representing the long-term vision for hazard reduction and enhancement of mitigation capabilities statewide.
- The goals will be long-term (or short-term goals that assist in gaining long-term effects), and represent a global vision for the Commonwealth.
- The goals will be based any of the following:
 - Policy development
 - Programmatic design and/or support
 - Projects (structural and non-structural).

The SHMT identified the following preliminary mitigation options, all of which play a significant role in the Commonwealth's resiliency:

- Prevention
- Property protection
- Public education and awareness

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(c)(3)(i & iii), which state the following:

Plan Content. To be effective the plan must include a Mitigation Strategy that includes:

- A description of the State goals to guide the selection of activities to mitigate and reduce potential losses.
- An identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified.

- Natural resource protection
- Emergency services
- Structural projects.

The 2010 goals and corresponding updated goals for the 2013 update are as follows:

- Goal 1:
 - 2010 Version: Meet the DMA 2000 planning requirements for hazard mitigation plans.
 - 2013 Version: Evaluate and analyze vulnerability in order to guide and promote sound mitigation activities through integrated planning to support a comprehensive state mitigation program.
- Goal 2:
 - 2010 Version: Increase awareness of the cost-savings and public safety benefits of hazard mitigation projects.
 - 2013 Version: Increase awareness of the benefits of hazard mitigation through outreach and education.
- Goal 3:
 - 2010 Version: Increase coordination and cooperation between state agencies in implementing sound hazard mitigation planning and project development.
 - 2013 Version: Increase coordination and cooperation among state agencies in implementing sound hazard mitigation planning and sustainable development.
- Goal 4:
 - 2010 Version: Fund cost-effective hazard mitigation projects through available federal grants and local cost share—PDM, HMGP, FMA, Severe Repetitive Loss, and 406 Mitigation Programs.
 - 2013 Version: Promote cost-effective hazard mitigation actions that protect and promote public health and safety from all hazards with a particular emphasis on reducing damage to repetitive and severe repetitive loss properties.
- Goal 5:
 - 2010 Version: Monitor, evaluate, and disseminate information on the effectiveness of completed hazard mitigation projects, especially after disaster events.
 - 2013 Version: Monitor, evaluate, and disseminate information on the effectiveness of hazard mitigation actions implemented by state, local, and private partnerships.

17.2.3 Mitigation Actions Update

Review of Existing Actions and Development of New Actions

The SHMT held a workshop to review the hazard mitigation action plan. During review, update, and development of new mitigation actions, existing actions were reviewed, and in some instances, slight revisions were made to correct grammatical errors, strengthen or expand the action, or provide more specificity. Realignment of the existing actions to coordinate with the new goals was not necessary. Participants reviewed each action and determined its status:

- No actions were removed during this update cycle.

- Revised actions are those which are still a priority to the Commonwealth, but needed to be modified for this update.
- Ongoing and continual actions are ones that the Commonwealth has worked on but that are perpetual.
- Unchanged actions are carried forward directly from 2010 plan.
- Completed actions are noted as such, but in most instances, they are also actions that will continue during the next update cycle. Although noted as completed, they remain in the state strategy for future updates as applicable.
- As a result of the February 6, 2013 and May 22, 2013 meetings, surveys, emails, and one-on-one discussions, a number of new actions were identified and added.

Prioritization Process

The STAPLEE planning criteria were applied to prioritize all of the new and ongoing actions as the method of prioritization (this is the same process followed in the 2010 plan):

- Social
 - Community Acceptance
 - Effects on Segment of Population
- Technical
 - Technical Feasibility
 - Long Term Solution
 - Secondary Impacts
- Administrative
 - Staffing
 - Funding Allocated
 - Maintenance/ Operations
- Political
 - Political Support
 - Local Support
 - Public Support
- Legal
 - State Authority
 - Existing Local Authority
 - Potential Legal Challenge
- Economic
 - Benefit of Action
 - Cost of Action
 - Contributes to Economic Goals

- Outside Finding Required
- Environmental
 - Effects on Land/Water
 - Effects of Hazardous Materials/ Waste Sites
 - Consistent with Community Environmental Goals
 - Consistent with Federal Laws

Updated 2013 Mitigation Actions

Appendix G presents the results of the 2013 STAPLEE analysis. Table 17-1 presents the complete set of actions included in the 2013 hazard mitigation strategy. Actions that are new for this update are noted as such in the comments column of the table. Completed actions from 2010 are noted at the end of the table. The actions listed in the matrix are those that were considered to be the highest priority as they contribute to the overall state hazard mitigation strategy. The plan does not include all mitigation actions that the SHMT would consider and like to implement.

TABLE 17-1. UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY				
Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
Goal 1. Evaluate and analyze vulnerability in order to guide and promote sound mitigation activities through integrated planning to support a comprehensive state mitigation program.				
<i>a. Complete a standard State Hazard Mitigation Plan Update and submit for FEMA review and approval prior to the October 2013 deadline per DMA 2000. The Commonwealth has written the plan to enhanced status, with the hopes of gaining that status with the submission of the 2013 plan.</i>				
SHMT, SHMIC	FEMA Final Approval by 10/ 11/ 2013	Current MEMA/ DCR staff and contractor; federal and state funds	Required by DMA 2000 planning regulations. A FEMA-approved state mitigation plan is needed to continue to implement the Statewide Mitigation Planning Strategy and to continue the availability of disaster assistance and hazard mitigation grants.	Progress made. The Commonwealth continues its commitment to a statewide mitigation program through the continual update of the Massachusetts SHMP. The 3-year required update started in fall 2012, in conjunction with development of the THIRA. A contractor was hired to assist.
<i>b. Perform a statewide risk analysis for all hazards to include in future updates to this state hazard mitigation plan and other related plans</i>				
SHMT, SHMIC, MEMA	1 year	HMGP, PDM Planning Grant, State funds	An updated hazards analysis would enhance the validity, accuracy, and practicality of the statewide risk analysis.	2013 progress made. This task is being accomplished through the SHMP risk assessment update and creation of the THIRA (see Goal 1 Action (1) below).

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>c. Develop State Hazard Mitigation Plan and submit to FEMA for approval.</i>				
SHMT	1 year	Current MEMA/DCR staff; HMGP funds	An enhanced plan will allow the Commonwealth to be eligible for up to 20% in available HMGP funding. Additional HMGP funding will support implementation of more hazard mitigation projects as identified in the state, regional, and local hazard mitigation plans.	2013 progress made. The SHMT continues to view this as an important step in strengthening the mitigation program. The SHMT continues to evaluate the feasibility of becoming an enhanced state. The contractor conducting the 2013 update has developed the plan to an enhanced status, and will be providing the SHMT with a gap analysis highlighting any areas in the mitigation program that may need strengthening to gain enhanced status.
<i>d. Work with the SHMIC to research and develop a more realistic set of criteria by which to prioritize mitigation actions that capture timely and relevant mitigation needs throughout the Commonwealth.</i>				
SHMT and SHMIC	1 year	Current MEMA/DCR Staff; HMGP funds	With the intent of increasing stakeholder participation at the state level, a different system may be needed to prioritize mitigation efforts. The current method prioritizes action items at a statewide level based on the STAPLEE. This may not be appropriate in determining priority for specific projects for each department or agency, as each department or agency has its own level of priority for projects.	New for 2013: The Commonwealth views this as a high priority as it will support Goal 4e.
<i>e. Partner with regional planning agencies and other groups in Massachusetts to develop and implement regional and local multi-hazard mitigation plans by providing technical assistance.</i>				
SHMT	3 years	Current MEMA/DCR/ CZM staff; state funds	FEMA-approved local mitigation plans are needed to implement the Statewide Mitigation Planning Strategy and the availability of hazard mitigation grants to communities. Regional planning agencies bring local and regional planning expertise, knowledge, and contacts, especially in transportation issues and land use planning, to the mitigation planning process.	Progress made/ continual. From 2010 – 2012 sixty-six communities received FEMA formal approval for their local hazard mitigation plan. Through the continual implementation of the Massachusetts mitigation program, the SHMT will continue to work with local communities and/or regional planning agencies to assist with the development and update of local hazard mitigation plans through technical assistance and funding.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>f. Apply for available federal funding to implement and update the completed and approved multi-jurisdictional and local hazard mitigation plans.</i>				
SHMT	3 years	Future Hazard Mitigation Assistance programs (PDM-C, HMGP & FMA)	Obtain maximum available funding to implement identified mitigation projects. Federal mitigation grant funding is a key component to support implementation of hazard mitigation projects as identified in the state, regional, and local hazard mitigation plans.	Progress made/ continual. Through the implementation of the Massachusetts mitigation program, the SHMT continues to work with communities and regional planning agencies to assist with the development of single and multi-jurisdictional local hazard mitigation plans. From 2010 – 2012 the SHMT received 22 applications for planning grants to either update or develop HMP's.
<i>g. Continue to incorporate new data and recommendations from the FEMA-approved regional and local mitigation plans into the SHMP, especially locations of critical facilities and assessments of vulnerability and estimates of potential losses by jurisdiction.</i>				
SHMT	3 years	MEMA/ DCR staff	Analyze regional and local data and make recommendations to update the SHMP. Compile up-to-date lists of prioritized hazard mitigation projects and actions throughout the Commonwealth for consideration.	Progress made/ continual. MEMA is invested in increasing its capabilities to prevent, protect against, mitigate, respond to and recover from the threats and hazards that pose the greatest risk to the Commonwealth. In keeping with this desire, in 2012, MEMA hired a full-time GIS coordinator as well as a business systems specialist aimed to increase data and technical capabilities. The SHMT, along with the business systems specialist, is currently looking into database options to assist with capturing local plan data, including local GIS data.
<i>h. Track potential hazard mitigation actions statewide in a database, using new information provided by the multi-jurisdictional plans with local annexes and state agencies.</i>				
SHMT	3 years	Current MEMA/ DCR staff	Develop a statewide database of potential hazard mitigation actions that support the goals and objectives of completed mitigation plans.	Progress made. The resources needed to accomplish this action will be included in the same discussions as for Goal 1 Action (g). The SHMT, in coordination with the business systems specialist, will research and develop a resource that is able to provide project tracking.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>i. Coordinate data collection and sharing with other statewide planning initiatives, such as the Statewide Homeland Security Planning process.</i>				
SHMT, Executive Office of Public Safety and Security (EOPSS)	3 years	Current MEMA, DCR, EOPSS staff	Combining resources will allow for more accurate information in several statewide plans. Coordination of data collection methodology and new information will allow for a more accurate statewide plans and maps.	Progress made/ continual. Integration continues to be a priority for the SHMT. There have been several efforts conducted during the last 3 years. The development of the THIRA as well as the Massachusetts Local Public Health Departments utilized local and state hazard mitigation plan data to conduct risk assessments. Statewide evacuation and shelter plans are utilizing the new SLOSH mapping data, and the Risk MAP efforts integrate local hazard mitigation plans and promote resiliency.
<i>j. Continue to support existing statewide mitigation planning, especially the Community Assistance Program-State Support Element Floodplain Management Plan, including activities under the National Flood Insurance Program, and the Risk MAP Business Plan.</i>				
DCR Flood Hazard Management Program	3 years	Community Assistance Program-State Support Element funding; Risk MAP, CTP funding; Flood Hazard Management Program staff	Ongoing and improved compliance with the NFIP, in conjunction with the Risk MAP, will allow the Commonwealth to focus its resources, such as technical assistance and mitigation grants, in the highest flood risk communities.	This continues to be a priority for the Commonwealth. These efforts are part of the daily and yearly implementation of the program. See section 3.2.3 for the technical assistance and outreach the SHMT has provided since 2010.
<i>k. Address data deficiencies and improve analysis, when available, by partnering with federal, state, local, and other subject matter experts.</i>				
SHMT	3 years	PDM Planning Funds and/ or Current MEMA, DCR, EOPSS staff	Continue to improve the risk assessment for the Commonwealth and address data deficiencies. This action also encompasses the incorporation of all new or improved data that are made available to the Commonwealth.	Progress made. Data deficiencies highlighted in the 2010 risk assessment will be addressed where possible during the 2013 update. The consultant hired to develop the THIRA and the capabilities assessment was also hired to conduct the 2013 SHMP update. The purpose of this was to be able to garner the best possible integration between the two plans.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>l. Create a statewide Threat and Hazard Identification and Risk Assessment (THIRA) as described in FEMA’s April 2012 Threat and Hazard Identification and Risk Assessment Guide (CPG 201). In conjunction with the development of the THIRA conduct a statewide capabilities gap assessment. The THIRA will be the man-made-hazards portion of the risk assessment in the SHMP</i>				
SHMT, SHMIC, THIRA Planning Committee	1 year	PDM and HMGP grants	In accordance with Presidential Policy Directive 8 and the National Preparedness Goal, the THIRA will be developed to create a “secure and resilient state with the capabilities required across the whole community to prevent, protect against, mitigate, respond to and recover from the threats and hazards that pose the greatest risk.”	New. The THIRA was submitted to FEMA for review and approval January 31, 2013.
Goal 2. Increase awareness of the benefits of hazard mitigation through outreach and education.				
<i>a. Develop and implement a statewide hazard mitigation training program, including educational materials for federal and state agencies</i>				
SHMT, SHMIC	3 years	HMGP, state funds	Greater awareness among state and federal agencies will reduce risks from natural hazards by allowing for more effective implementation of the hazard mitigation strategy, especially the completion of mitigation actions.	Progress made: Completed for the 2010-2013 cycle. The Commonwealth continues to provide ongoing training and technical assistance of various types (discussed in Section 3 in greater detail) as a general course of action. This includes the development of studies and reports that help provide information concerning specific hazards, such as the ongoing landslide study and the various Coastal Erosion/ Climate Change reports that have been released since the 2010 plan. During the current update cycle, additional outreach was conducted. During the 2013-2016, items identified in the 2013 updated SHMP will be reviewed and additional training will occur as opportunities arise.
<i>b. Conduct hazard mitigation community outreach and educational programs for the general public, such as programs in schools and at home improvement stores and events.</i>				
SHMT, SHMIC	3 years	Hazard mitigation admin and technical assistance funds	Educated consumers will be better protected from natural disasters because they have reduced risks by implementing various hazard mitigation techniques, projects and actions.	This continues to be important to the Commonwealth and opportunities will be looked for throughout the 3-year planning cycle. Progress made: During the response to the 2010 spring flood, 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 (also discussed in Section 2).

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>c. Continue to hold hazard mitigation grant workshops for state agencies and local governments after natural disasters, especially immediately following Presidential Disaster Declarations.</i>				
SHMT	Within 2-3 months of disaster declaration	Hazard mitigation admin and technical assistance funds	Informed public officials will apply for funding for hazard mitigation projects and will motivate communities without plans to develop hazard mitigation strategies.	In addition to grant briefings (see Section 3), MEMA staff regularly speaks at area universities regarding mitigation and preparedness programs
<i>d. Use the Internet to develop more consistent and timely tools for distributing information about current hazard mitigation programs and success stories in Massachusetts to other government agencies, the private sector, and the general public.</i>				
SHMT	3 years	HMGP and technical assistance funds	Informed public officials will apply for funding for hazard mitigation projects as well as motivate communities without plans to develop hazard mitigation strategies. Informed local officials will apply for funding for hazard mitigation projects and actions that will help to reduce future risks.	Progress made/ continual. The Commonwealth continues to see this as a priority. In addition to the continued outreach with CZM and Storm Smart Coasts, the mitigation unit has developed electronic forms such as applications and quarterly reports to facilitate ease of submission from sub-applicants.
<i>e. Provide improved outreach to all eligible applicants for mitigation projects and planning.</i>				
SHMT	1 year	State resources	More partners in mitigation will increase the effectiveness of the overall mission of mitigation in Massachusetts.	Progress made/ continual. The Commonwealth continues to see this as a priority. The mitigation staff will look at the current program to determine areas of opportunity for improvement.
Goal 3. Increase coordination and cooperation among state agencies in implementing sound hazard mitigation planning and sustainable development.				
<i>a. Investigate the possibility of creating a standardized format or model for local hazard mitigation plans to create consistency among all plans statewide.</i>				
SHMT, CZM Staff	1-3 years	Staff resources	Massachusetts has 351 communities with the potential to have 351 different plans and formats. Having a standardized format will facilitate incorporation of data to state or regional mitigation plans	Progress made/ continual. The Commonwealth continues to see this as a priority. To that end, the mitigation planning staff is developing a tool to help communities standardize traditionally problematic sections of the plan.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>b. Develop a strategy to reduce the overlap between Comprehensive Emergency Management Plans and Hazard Mitigation Plans</i>				
SHMT, MEMA	1-3 years	Staff resources	Creating a comprehensive approach to all emergency and mitigation planning can eliminate local confusion and help to make planning funding more effective at the local level by not duplicating benefits of state and federal programs.	Progress made. MEMA mitigation planning staff has begun conversations with the MEMA All-Hazards planning staff to better coordinate/ integrate the local Comprehensive Emergency Management Plans and local hazard mitigation plans.
<i>c. Build ‘non-traditional’ partners in mitigation by encouraging colleges and universities, non-governmental organizations, private non-profits, and the private sector to use their resources to study hazard vulnerability and implement mitigation projects and by prioritizing project applications for traditional funding sources that leverage funding and contributions from these non-traditional sources.</i>				
SHMT lead, involves many agencies	3 years		Building partnership with all public and private partners to reach more citizens and increase awareness for mitigation and help to leverage funding for more diverse mitigation projects.	Progress made. The SHMT continues to view this as an important step in strengthening the mitigation program. The SHMT has worked hard to include non-traditional partners in the planning process, including outreach with funding opportunities. Multiple state universities have used Hazard Mitigation Assistance funding to study hazards. See Table 3-3 for HMGP grant applications received.
<i>d. Educate all communities, state agencies, and the private sector—specifically building and insurance industries—about the benefits of mitigating against natural hazards by participating in planning and projects.</i>				
SHMT	3 years	Staff resources	Greater awareness of mitigation at the local level will reduce risks from natural hazards by allowing for more effective implementation of the strategy, especially the completion of mitigation actions.	The Flood Hazard Management Program (FHMP) routinely visits and contacts communities to discuss National Flood Insurance Program issues and standards, as enforced primarily through state regulations, and floodplain management in a general sense. In the last three years this would have included about 72 communities. Additionally, workshops have been held each of the last three years with the South Eastern Massachusetts Building Officials Association (SEMBOA) in which a much wider audience can be reached as this annual two-day workshop is open to the whole state. Contacts made in these visits and workshops invariably leads to follow-up conversations with homeowners, design professionals, real estate and insurance professionals, and other interested parties with specific questions about insurance, proposed projects, mapping and other floodplain management issues.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>e. Continue to make recommendations to the Board of Building Regulations and Standards as the Massachusetts State Building Code is updated to include updated NFIP standards and other building standards related to natural hazards, such as wind, snow, seismic loads, and other hazards.</i>				
MEMA, DCR, SHMIC	3 years, as needed (dependent on Building Code update schedule)	MEMA, DCR staff	The inclusion of revised federal mitigation standards in the State Building Code will allow for consistent implementation of sound mitigation measures statewide, especially in new construction and in the repair/renovation of substantially damaged structures. Allows for uniform application of mitigation measures by local officials.	FHMP staff, along with DEP and CZM coordinated extensively with BBRS staff to during the update of the Building Code to the 8 th Edition. The Base Volume, 8 th Edition, became effective in August 2010 and the Residential Volume, 8 th Edition became effective in February 2011. Coordination between these agencies ensured that Massachusetts standards from the 7 th Edition of the Code were brought forward to the 8 th Edition and that the Codes remained consistent with NFIP standards.
<i>f. Encourage project granting agencies in the Commonwealth, such as the Massachusetts Department of Housing and Community Development's review of Community Development Block Grants, to include the analysis of hazard impacts when reviewing applications for funding</i>				
SHMT, SHMIC	3 years	MEMA, DCR, EOPSS	By avoiding the building of new structures in an area of potential natural hazard impacts, this coordinated action between agencies will reduce or mitigate future damage and costs following future hazard events.	Progress made. This continues to be a priority for the Commonwealth. The SHMT is looking beyond its own programs to expand outreach to other programs in order to better integrate hazard mitigation. One such program is the MassWorks Infrastructure Program. Mitigation staff has attended grant briefing meetings to start the conversation. Other such discussions have been a focus with existing SHMIC members to ensure maximum integration.
<i>g. Recruit additional state agencies to become involved in the State Hazard Mitigation Interagency Committee.</i>				
SHMT	3 years	MEMA, DCR Staff	Active participation of state agencies in the SHMIC will facilitate the sharing of information between agencies, expedite implementation, and ensure more widespread and consistent implementation of sound hazard mitigation measures throughout the Commonwealth.	Progress made. Since the 2010 plan approval a new department within an existing SHMIC agency has been added. An outreach plan was developed to increase the number of state agency SHMIC members. It is a goal to add six agencies/ departments within an agency to the list in the next 3 years.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>h. Continue working with other state agencies, especially those on the State Hazard Interagency Committee, to ensure that all the necessary permits and requirements are being met before the execution of all hazard mitigation projects through the Hazard Mitigation Assistance Programs.</i>				
SHMT, SHMIC	Through the 3 year planning cycle - especially following a federal disaster declaration	MEMA, DCR Staff, and State Grants Admin. Plan	By coordinating all the necessary federal and state permits, the Commonwealth will avoid future problems as projects are constructed. Coordination of permits and other requirements ensures a timely completion of an effective mitigation project.	Unchanged. The Commonwealth continues to see this as a priority. With the hiring of two new Project Specialists the SHMT is able to attend more preconstruction and FEMA EHP meetings to ensure all permits and requirements are being met. Section
Goal 4. Promote cost-effective hazard mitigation actions that protect and promote public health and safety from all hazards with a particular emphasis on reducing damage to repetitive and severe repetitive loss properties.				
<i>a. Research the potential for implementing a source for a state investment in mitigation.</i>				
SHMT, MEMA	Ongoing	Staff resources	Assessing state assets and potential for partnering with existing programs and funding sources allows the Commonwealth to maximize the potential local and state contribution to hazard mitigation projects.	Unchanged. Although no movement was made on this action, the Commonwealth continues to see this as a priority.
<i>b. Enhance the effectiveness of 406 funding by working to further integrate mitigation into the FEMA Public Assistance Program.</i>				
SHMT, MEMA	Ongoing	Staff resources	By working with FEMA Public Assistance Program, the Commonwealth can maximize the cost-effectiveness of federal grants by mitigating hazards during the recovery process.	Progress made. The Commonwealth continues to see this as a priority. The SHMT coordinates with the mitigation branch at the joint field office (when established) to imbed a state mitigation staff with the PA staff to ensure mitigation is investigated for every project worksheet. There have been 3 JFO's established since the 2010 plan. Only the March 2010 Floods had a MEMA/DCR staff person working at the JFO. The other events were handled remotely.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>c. Apply for available federal hazard mitigation project grants through pre-disaster and post-disaster mitigation programs and other federal mitigation programs as the funding becomes available and explore.</i>				
SHMT	Ongoing	MEMA, DCR staff, FEMA grants, State Grants Administrative Plan	Hazard mitigation projects are expensive and federal funding is needed by the Commonwealth and communities to complete most projects. Funding cost-effective hazard mitigation projects in high-risk areas, as identified in this plan as well as in regional and local hazard mitigation plans, will reduce future losses.	Progress made. The Commonwealth continues to see this as a priority. Massachusetts has experienced a series of disasters during the last 3 years. Based on this, the SHMT has focused on managing the HMGP program funds in an efficient and effective manner. When funds are made available, the SHMT manages the non-disaster funding program as well. See Section 3 for details on outreach efforts.
<i>d. Notify all eligible applicants of available hazard mitigation project grant programs for mitigation projects, including available funding through the Unified Hazard Mitigation Assistance programs and other mitigation opportunities</i>				
SHMT	Ongoing	MEMA, DCR staff, FEMA grants, State Grants Administrative Plan	Hazard mitigation projects are expensive and federal funding is needed by the Commonwealth and communities to complete most projects. Funding cost-effective hazard mitigation projects in high-risk areas, as identified in this plan and in regional and local hazard mitigation plans, will reduce future losses.	Progress made. The Commonwealth continues to see this as a priority. The Commonwealth of Massachusetts has experienced a series of disasters during the last 3 years. The SHMT manages an outreach program for FEMA’s HMA programs. Based on this, the SHMT has focused on managing the HMGP program funds in an efficient and effective manner. When funds are made available, the SHMT manages the non-disaster funding program as well. See Section 3.
<i>e. Work with state agencies that own state facilities believed to be at high or medium flood risk or overland tidal surge to further evaluate the flood and surge risk and to identify and implement appropriate mitigation actions.</i>				
SHMT, SHMIC	3 to 5 years	MEMA, DCR staff; individual agency capital funding; FEMA planning and project grant funding	Individual analysis will provide a better assessment of the flood and surge risks and identify specific flood mitigation measures for implementation by state agencies. By further identifying these risks and mitigation measures for individual structures and facilities, the Commonwealth can make recommendations for funding appropriate projects that will reduce or eliminate these risks.	Progress made. As a result of the THIRA/ SHMP update, the consultant is providing detailed maps showing state-owned facilities located in high hazard areas. As part of the deliverables for this project, the consultant will supply an outreach strategy for the SHMT to work with agencies with buildings/ infrastructure in the hazard areas to develop actions to mitigate their risk.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>f. Develop a methodology for collecting and assessing the natural hazard risks, especially flooding, erosion, and storm damage, for all current and future state-owned facilities and properties, to be used by agencies to identify and implement appropriate mitigation actions.</i>				
SHMIC, MEMA, DCR, DCAMM	Ongoing	MEMA, DCR staff, SHMIC, MassDEP & CZM	Collecting such data will assist in identifying high-risk facilities and properties and incorporating hazard mitigation measures into the planning processes. Improving the data on high-risk facilities will assist in implementing hazard mitigation measures for specific facilities and properties.	Progress made. New process for 2013. As a result of the THIRA/ SHMP update processes, the consultant is providing detailed maps showing state-owned facilities located in high hazard areas. As part of the deliverables for this project, the consultant will supply an outreach strategy for the SHMT to work with agencies with buildings/ infrastructure in the hazard areas to develop actions to mitigate their risk.
<i>g. Work with state agencies to fully identify all potential hazards to facilities before major repairs, or the construction of new facilities, to minimize future impacts from natural hazards, particularly flooding, storm damage, and erosion.</i>				
SHMIC, MEMA, DCR	Ongoing	MEMA, DCR staff, SHMIC, MassDEP & CZM	Recognizing exposure to natural hazards prior to construction of all new state facilities and major renovations to such facilities will result in appropriate hazard mitigation measures being included in the master planning and design process. Inclusion of hazard mitigation measures during the planning of facilities will save future repair and disaster assistance costs.	Unchanged/ progress made. The Commonwealth continues to see this as a priority. There are a few mechanisms within the Commonwealth that help facilitate this action. Members of the SHMT are responsible to review projects as part of the Massachusetts Environmental Policy Act review process, primarily looking at the construction of buildings in the floodplain to determine if comments are warranted. This gives staff the ability to inject mitigation for consideration. It is also the SHMT's intent to incorporate this discussion in conjunction with helping state agencies develop mitigation actions for their vulnerable facilities.
<i>h. Work with communities to implement cost-effective, environmentally sound, and feasible mitigation projects to severe repetitive loss properties.</i>				
SHMT	Ongoing	Hazard Mitigation Assistance Program funds	Mitigation of severe repetitive loss structures will reduce or eliminate claims under the NFIP through project activities that will result in the greatest savings to the NFIP in the shortest period of time.	Progress made. This is a normal/ daily objective of the SHMT, specifically the State Floodplain office. See Section 3 for an overview of the technical assistance and outreach the SHMT provided since 2010.
Goal 5. Monitor, evaluate, and disseminate information on the effectiveness of hazard mitigation actions implemented by state, local, and private partnerships.				

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>a. Develop a process to track all completed mitigation projects in Massachusetts, including 406 mitigation and privately funded mitigation projects.</i>				
SHMT	3-5 year	Staff resources	Evaluating existing successes can act as a public relations tool to create awareness to the importance of natural hazard mitigation.	Progress made. This continues to be a priority for the Commonwealth and will be incorporated into the discussions for the project database development action (Goal 5 Action (b) below). In addition, the SHMT, in conjunction with FEMA mitigation staff from the Hurricane Sandy joint field office, conducted a loss avoidance study. As a result, it is apparent that data collection is pivotal to a successful loss avoidance study and will therefore also be considered during database development to ensure proper data collection/tracking.
<i>b. Evaluate the feasibility of maintaining a database of potential mitigation projects across the Commonwealth, taken from local hazard mitigation plans, project worksheets from the Public Assistance process, and other sources.</i>				
SHMT, MEMA	3-5 years	Staff resources	Evaluating potential projects will allow the Commonwealth to maximize the cost-effectiveness of federal grants by mitigating hazards in a pre- and post-disaster setting.	Progress made. MEMA is invested in increasing its capabilities to prevent, protect against, mitigate, respond to and recover from the threats and hazards that pose the greatest risk to the Commonwealth. In keeping with this desire, MEMA has hired a full-time GIS coordinator as well as a business systems specialist, to increase data and technical capabilities. The SHMT, along with the business systems specialist, is currently looking into database options to assist with capturing local plan data, including local GIS data.
<i>c. Prepare hazard mitigation best practices and case studies on a regular basis.</i>				
SHMT, FEMA	Throughout the 3-year planning cycle and following future disasters	MEMA, DCR, and FEMA Public Information staff.	Sharing information on completed hazard mitigation projects that prevent loss and damage demonstrates the effectiveness of the hazard mitigation program and motivates other communities to undertake similar hazard mitigation projects in the future. Mitigation project "success stories" help to publicize communities and effective projects, thereby raising awareness of effective hazard mitigation measures.	Progress made. The most recent best practices were developed during the March 2010 flood joint field office. In the absence of a joint field office, the SHMT will capture best practices as projects are completed.

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
<i>d. Implement a standard information-sharing procedure on disaster damage data collected by FEMA, PDA, Community Relations, and infrastructure inspectors to use in local hazard mitigation planning efforts and identifying potential hazard mitigation projects.</i>				
SHMT, FEMA	Throughout the 3-year planning cycle and following future disasters	MEMA, DCR, and FEMA Infrastructure (Public Assistance) staff	In-the-field inspectors can provide useful information on opportunities for hazard mitigation projects. Timely, coordinated data can better identify areas that warrant mitigation actions and eliminate duplication of efforts by programs.	Progress made. The Commonwealth continues to see this as a priority. Starting with the March 2010 flood event, the SHMT coordinates with the mitigation branch at the joint field office (when established) to imbed state mitigation staff with the PA staff to ensure mitigation is investigated for every project worksheet.
<i>e. Improve the Commonwealth’s capabilities assessment by integrating the locally administered capabilities and the state level capabilities in order to demonstrate how mitigation efforts at various levels are implemented and integrated. This will also provide the Commonwealth with information concerning any gaps or areas in which improvement can occur, either at the state or local levels to increase mitigation potential.</i>				
SHMT, SHMIC, and Local Jurisdictions	Throughout the 3-year planning cycle and as plans are submitted to the Commonwealth for review.	MEMA, DCR staff	Providing information of this type will help determine where emphasis needs to be placed with respect to the capabilities at both the local and state levels. Integration of the capabilities will enhance effectiveness and provide information on where to focus efforts.	New effort for 2013. The Commonwealth sees this as a priority with a high value. A new database will be designed that will allow the capturing of this information in greater detail. This will be supported by action (g) for Goal 1, with the hiring of a full-time GIS coordinator as well as a business systems specialist aimed to increase data and technical capabilities.
<i>f. Research best practices and then work with the Regional Planning Agencies and local communities through outreach and education to help local communities strengthen the ownership of the planning process.</i>				
SHMT, SHMIC	Throughout the 3-year planning cycle and following future disasters	MEMA, DCR, Regional Planning Agencies, and FEMA staff	With many of the Commonwealth’s current local plans in the process of being updated, or about to expire, outreach will be very beneficial. Providing assistance during the development of the plans or encouraging development of local plans will be paramount in continuing a successful mitigation program. The use of the newly developed local survey will also provide guidance to the local planners, as well as providing relevant information to the Commonwealth.	New effort for 2013. The Commonwealth sees this as a high priority with a high value. The SHMT will develop an outreach strategy to assist the Regional Planning agencies and local communities in understanding the importance of plan integration and ownership. Enhanced outreach by all planning partnerships will help ensure a higher-level of plans and stronger mitigation programs. ,

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
Goal 1 Actions Completed, 2010 – 2013				
<i>a. Complete a standard state hazard mitigation plan and submit for FEMA review and approval prior to the September 2010 deadline per DMA 2000.</i>				
SHMT and SHMIC	Current	Current MEMA/DCR staff; state funds	Required by DMA 2000 planning regulations. A FEMA-approved state mitigation plan is needed to continue to implement the Statewide Mitigation Planning Strategy and to continue the availability of disaster assistance and hazard mitigation grants.	The 2010 revised SHMP received FEMA formal approval 10/12/2010; 2013 submitted for review.
<i>b. Perform a statewide risk analysis for all hazards to include in future updates to this state hazard mitigation plan and other related plans</i>				
SHMT, Interagency Committee, MEMA	1-3 years	HMGP, PDM Planning Grant, State funds	An updated hazards analysis would enhance the validity, accuracy, and practicality of the statewide risk analysis.	Completed for 2010-2013 SHMP and THIRA
Goal 2 Actions Completed, 2010 – 2013				
<i>a. Develop and implement a statewide hazard mitigation training program, including educational materials for federal and state agencies</i>				
SHMT and SHMIC	Ongoing	HMGP, state funds	Greater awareness among state and federal agencies will reduce the risks from natural hazards by allowing for more effective implementation of the strategy, especially the completion of mitigation projects and actions.	
<i>b. Conduct hazard mitigation community outreach and educational programs for the general public, such as programs in schools and at home improvement stores and events.</i>				
SHMT and SHMIC	Ongoing	Hazard mitigation admin and technical assistance funds	Educated consumers will be better protected from natural disasters because they have reduced risks by implementing various hazard mitigation techniques, projects, and actions.	Completed. During the response to the 2010 spring flood, 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. In addition, MEMA staff regularly speaks at area universities regarding mitigation and preparedness programs

**TABLE 17-1.
UPDATED ACTIONS FOR 2013 HAZARD MITIGATION STRATEGY**

Responsible Agency	Projected Timeline	Resources	Explanation	Update Comments and Revisions
Goal 5 Actions Completed, 2010 – 2013				
<i>c. Prepare hazard mitigation best practices and case studies on a regular basis.</i>				
SHMT & FEMA	Throughout the 3-year planning cycle and following future disasters	MEMA, DCR, and FEMA Public Information staff.	Sharing information on completed hazard mitigation projects that prevent loss and damage demonstrates the effectiveness of the hazard mitigation program and motivates other communities to undertake similar hazard mitigation projects in the future. Mitigation project “success stories” help to publicize communities and effective projects, thereby raising awareness of effective hazard mitigation measures.	Completed. The most recent best practices were developed during the March 2010 Flood joint field office.

Approach to Future Prioritizing of Mitigation Actions

The statewide mitigation goals, action items, and opportunities for improvement to existing mitigation programs represent a multi-faceted comprehensive approach to addressing natural hazards in the Commonwealth. The actions will be undertaken as resources and program improvement opportunities become available, the regional multi-jurisdictional plans and local annexes are completed, and the impacts of disasters events are analyzed. In most cases, the goals and actions draw from different sets of resources, so there is no competition for limited resources between alternative mitigation actions.

The 2013 update emphasizes increased state-agency participation (see Section 2). Based on the anticipated increased level of participation, SHMIC members determined that the previous method of prioritizing projects may not be as effective for future updates, for a variety of reasons:

- Because of the probability and severity of multiple risks faced by Massachusetts, the Commonwealth is continuously addressing multiple hazards, vulnerabilities, and risks as defined in the risk assessment and THIRA portions of the SHMP.
- Differences in diversity, socioeconomic factors, geographic variation, and levels of risks and vulnerabilities make it difficult to assign priority to one type of hazard over another on a statewide basis.
- Post-disaster assessments after large disasters often stimulate new recommendations for legislative and administrative actions. This can result in important new lines of mitigation policy for specific hazards. Actions that are a result of state legislation, or Governor’s executive orders often carry the highest priorities.

Based on these considerations, the SHMT determined that a new method of prioritizing state-level actions and projects may be in order for future updates, which will be discussed and vetted with FEMA Region I after approval of the 2013 update. The concept of hazard mitigation must be embraced by all Massachusetts state agencies, as all play a vital role in protecting residents and providing resiliency and recovery through continuity of government. In order to foster holistic state and local programs that make

hazard mitigation a way of doing business, mitigation actions will not be ranked in numerical order as classified as high, medium or low priority.

Many state agencies also support mitigation efforts at the local level. In order for progress to be made on state mitigation actions, agencies, and organizations must maintain ownership and buy-in of the action items developed. Rather than encouraging agencies to develop a list of planning and construction projects geared only toward those eligible for federal hazard mitigation grants when they become available, the state program encourages agencies and organizations to include mitigation as they consider their normal course of business, such as when they develop strategic plans for their organizational operations, as well as during construction and location of new buildings, or when making existing facilities safer. Post-disaster assessments and ensuing legislative actions must also be considered.

The State Hazard Mitigation Program does not target available resources to only a handful of local jurisdictions or focus on just a few hazards. The reason for this is two-fold:

- The Commonwealth of Massachusetts has a home-rule style of governance. This means that local governments are responsible for maintaining control of government services and actions at the lowest possible level, rather than the Commonwealth providing top-down direction to control decisions that affect local citizens.
- It is not politically tenable to direct most or all of available resources to a limited area (such as a few flood-prone communities) or toward a restricted type of mitigation task (such as elevating or purchasing repetitive flood-loss properties). This discourages non-funded jurisdictions from developing and maintaining mitigation programs, plans, and projects.

Rather than establishing project priorities, the State Hazard Mitigation Program requires any mitigation project (including state-agency projects) proposed for funding through the federal hazard mitigation grant programs administered by the DCR and MEMA to do the following:

- Support the goals of the SHMP.
- Reduce identified hazard risk.
- Reduce repetitive losses, without regard to hazard.
- Protect critical areas, particularly frequently flooded and coastal areas, and geologically hazardous areas.
- Be cost-effective as well as environmentally sound and technically feasible.

Proposed state projects will compete with projects proposed by eligible local governments; this will ensure that federal grant-funded state and local projects address state hazard mitigation priorities. Given that the Commonwealth has attempted to gain participation from a wide-range of state agencies and seeks funding from many different sources, including its own operating funds, prioritizing specific projects would not be feasible, as each agency has an established priority schedule, and that schedule does not necessarily coincide among agencies. To prioritize projects based on a uniform approach is not practical. What an advisory team determines to be the greatest priority may, in reality, not be scheduled by an agency to occur at the time funding opportunities arise. Furthermore, impacts of a recent disaster may make other actions more important.

The SHMT agreed that the Administrative Plan, found in Annex 2, is the best option for prioritizing mitigation actions. Any state government projects funded by federal hazard mitigation grant programs administered by the Commonwealth must meet specific criteria related to cost-effectiveness, environmental soundness, and technical feasibility.

17.2.4 Local Mitigation Actions

In the Commonwealth of Massachusetts, most mitigation actions—from construction projects to community outreach—are done at the local level. While MEMA, DCR, the CZM, and the National Estuary Programs (such as the Buzzards Bay and Mass Bays Projects) provide technical assistance to local jurisdictions to develop projects if requested, city and town governments typically make the decisions governing projects for their jurisdictions, from project design to implementation. Local officials best know the problems and issues in their communities. Variations in local administration, hazards, and population make each jurisdiction unique, and what may work in one community, or what may be a priority in one community, may not work in another. Rather than dictating the projects that should be done at the local level, the Commonwealth typically acts as a guide and provides resources as possible. Therefore, only projects that are state-agency related or statewide initiatives are listed in this plan. However, the Coordination of Local Planning Efforts section of this plan provides greater detail on local mitigation activities and unique projects developed at the local level.

17.2.5 Local Mitigation Projects

Local mitigation projects and plan applications are prioritized per criteria found in the Massachusetts Mitigation Grants Administrative Plan contained in Annex 2, and as discussed in Section 3.

17.3 STATE CAPABILITY ASSESSMENT

The capability assessment reviews the Commonwealth's hazard mitigation capability through state laws, regulations, authorities, and agencies. This section describes the state agencies involved in mitigation and presents a matrix of current state laws, executive orders, regulations, policies, and programs.

In addition to the matrix, which is specific to natural hazard mitigation, the Commonwealth has a broad approach to improve capabilities to mitigate, prevent, prepare, and respond to non-natural hazards. One such approach is through the annual investment plans of the Commonwealth's Homeland Security Councils. These regional investments – which include funding and capacity-building for planning, training, equipment, etc. – build capacity and mitigate non-natural hazards. These programs and initiatives are outlined in detail in Annex 1.

17.3.1 State Agency Partnerships

The Commonwealth has taken many steps to enhance resiliency to the hazards of concern through partnerships among state agencies to expand planning and programmatic development, provide funding opportunities, and develop policies and procedures to enhance hazard mitigation at a statewide level.

Planning partnerships to develop the Commonwealth's mitigation program include many state agencies, as well as private non-profit and non-governmental agencies. Section 2 provides additional information concerning SHMIC and SHMT roles and responsibilities.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(c)(3)(ii), and §201.5(b)(i), which states the following:

To be effective the plan must include a Mitigation Strategy that includes a discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including:

- An evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas.
- A discussion of State funding capabilities for hazard mitigation projects.

Enhanced Element:

- Demonstrate that the plan is integrated to the extent practicable with other State and/or regional planning initiatives (comprehensive, growth management, economic development, capital improvement, land development, and/or emergency management plans) and FEMA mitigation programs and initiatives that provide guidance to State and regional agencies.

State Hazard Mitigation Team

The Commonwealth maintains a statewide effort of interagency cooperation in the administration and management of its Hazard Mitigation Program. This program is a joint staffing effort between the DCR Flood Hazard Management Program, which oversees the National Flood Insurance Program, and the MEMA Disaster Recovery and Mitigation Division.

The SHMT consists of staff members employed by DCR and MEMA who work full-time on hazard mitigation planning, grants management, and project management. The team is co-chaired by the State Hazard Mitigation Officer at DCR and the Disaster Recovery and Mitigation Manager at MEMA. The team meets on a monthly basis to coordinate team members' individual hazard mitigation work assignments and to give progress reports on statewide mitigation plans, mitigation projects, and technical assistance.

State Hazard Mitigation Interagency Committee

The SHMIC consists of representatives of federal, state, regional, and local agencies, including the SHMT, that play key roles in implementing hazard mitigation programs, policies, and projects. The SHMIC reviews policies, coordinates mitigation efforts, recommends recipients of hazard mitigation grants, and assists in the development, implementation, and maintenance of the SHMP. For the 2013 plan update, the SHMIC was encouraged to have greater involvement than previous plan updates through integration into all areas of the plan update.

Office of Coastal Zone Management

An agency that has drawn significant attention during this planning cycle is the Executive Office of Energy and Environmental Affairs, Office for Coastal Zone Management, Coastal Hazards Commission. The following are examples of initiatives supported by the CZM:

- The StormSmart Coasts team at the CZM worked with the Town of Hull and Applied Science Associates to develop a three-dimensional (3D) visualization tool to improve local understanding of the impacts of flood events and sea level rise. 3D models were developed for seven Hull facilities that are critical to public safety, health and welfare. The 3D models depict current and possible future storm-event water levels around the most important infrastructure, including an emergency shelter and a wastewater treatment plant. The project technical report provides details on the methodology and includes images of Hull's critical facilities under varying flooding scenarios. These images are being used by town officials and facility managers to evaluate options to protect these services as well as the residents and businesses using them. Google Earth served as the platform for this product for ease of viewing and sharing.
- The Buzzards Bay National Estuary Program and the CZM are evaluating the potential expansion of the existing FEMA 100-year floodplain using Flood Insurance Rate Map (FIRM) base-flood elevations for Buzzards Bay municipalities. The floodplain was expanded with 1-foot, 2-foot, and 4-foot increases in sea level. The existing floodplain was extrapolated upward based on the FIRM base-flood elevations. This baseline floodplain was then expanded to account for 1-, 2-, and 4-foot sea level rises by adjusting the boundaries to the LIDAR elevations that corresponded to the base-flood elevations identified on the FIRMS. Using a recent assessor's data set, the number of buildings and municipal structures within these sea level rise scenarios was enumerated, along with assessed values. Results were produced for each community.
- In 2006, the Coastal Hazards Commission recognized that existing shoreline stabilization structures needed to be maintained and initiated an inventory of publicly owned seawalls, revetments, groins, jetties, and other structures. A series of reports produced from 2006 to

2009 for the CZM and the DCR provide ratings for the condition of these structures and estimates for repair or reconstruction costs. These ratings and estimates were determined by civil engineers who surveyed the structures.

- To address current and future storm damage impacts, the Town of Hull sought to improve standards guiding development and redevelopment and to enhance education and outreach regarding the risks associated with coastal storms and sea level rise. In September 2009, the Hull Board of Selectmen unanimously voted to enact the Commonwealth's first freeboard incentive program to encourage the elevation of flood-prone buildings above currently predicted floodwater levels to account for future coastal storm events and sea level rise. Through this freeboard incentive program, the town seeks to protect the health and safety of citizens, prevent property damage, and reduce costly emergency services. Hull's Conservation Agent worked with CZM and the town's Building Commissioner to develop the freeboard incentive, which enables the Building Department to offer a credit up to \$500 for permit fees to builders and homeowners who elevate new and renovated structures at least 2 feet above the highest federal or state requirement. (Buildings in A and V zones need to be elevated at least 2 and 4 feet above the base flood elevation, respectively, to meet the freeboard requirements.) In the first three years of the program, 20 of 24 permit requests for new construction or to elevate existing development included 2 or more feet of freeboard and qualified for the credit. An added benefit for property owners is significant discounts to flood insurance premiums. Many homeowners are building higher than required to maximize flood insurance savings and provide added protection from coastal storms. In May 2011, Hull's zoning bylaw was amended to address height restrictions and better accommodate freeboard. The Zoning Board of Appeals may now grant special permits to elevate existing buildings for flood protection. These building may exceed the height limit to provide a maximum of 4 feet of freeboard.
- As a CZM StormSmart Coasts pilot community, Oak Bluffs on Martha's Vineyard focused on changes to local bylaws and codes to minimize the town's storm risk. After numerous meetings and deliberations, a team of local officials and citizens identified several zoning changes as the most effective tools to address the town's concerns. Specifically, amendments to the town's floodplain overlay district will prohibit new residential development and expansion of existing development in the most hazardous flood zones—those designated by FEMA as V, VE, or AO zones. In less hazardous flood zones, designated as A zones, the town will require a special permit from the Zoning Board of Appeals. The amendments were presented to and approved by the town's selectmen and adopted at the town meeting held in May. In September, the Oak Bluffs Zoning Board of Appeals voted unanimously to adopt special permit regulations that clarify the process and parameters for development in the floodplain district.
- StormReporter is a web tool that enables rapid delivery and archiving of coastal storm damage information to inform emergency response activities, weather predictions, and project planning. With support from the Northeastern Regional Association of Coastal Ocean Observing Systems, StormReporter now has enhanced functionality, such as improved administration of the web tool, better user management of profiles, predefined site locations, a refined live report summary, a searchable table of reports, and a mobile site. StormReporter has also been made available to the other coastal states in New England through the national StormSmart Coasts Network's StormReporter's Notebook. CZM originally developed StormReporter in partnership with the National Weather Service and the StormSmart Coasts Network to standardize data collection for the Commonwealth's Rapid Response Coastal Storm Damage Assessment Team (Storm Team), as well as local beach teams and citizens interested in reporting coastal storm damage in Massachusetts communities. CZM has

provided regional and national web presentations to support the launch of this new version of StormReporter.

17.3.2 Massachusetts Existing Capabilities Matrix

Table 17-2 summarizes the Commonwealth’s hazard mitigation capabilities. The most current information on all Massachusetts state agencies may be found on the Commonwealth of Massachusetts website at www.mass.gov. The matrix has been updated for the 2013 edition to include the agency responsible for the identified protection element. In addition, the column previously titled “Existing Protection Element” has been renamed “Existing Mitigation Efforts” to allow for the inclusion of expanded information.

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Emergency Management				
Civil Defense Act of 1950	EOPSS and MEMA	Authorizes the creation of the Massachusetts Civil Defense Agency (predecessor to the Massachusetts Emergency Management Agency) and the development of a statewide civil defense program.	The Massachusetts hazard mitigation program is administered jointly by MEMA in coordination with the DCR. Maintains its effectiveness for enabling all intend programs.	Unchanged. Allows for statewide coordination of resources from numerous state agencies and the private sector allows for more effective program.
Massachusetts Executive Order 144 and Massachusetts Executive Order 242	MEMA and EOPSS	Amends and updates the Civil Defense Act of 1950 by creating the position of Secretary of Public Safety, coordinating emergency preparedness activities and the promulgation of a Comprehensive Emergency Response Plan for the Commonwealth.	Very effective EO that allows for the CEMP to be reviewed and revised as needed each year.	Improvements to the CEMP are continual - Mitigation staff will work with Recovery staff to include components to the new Recovery Annex into the mitigation programs and procedures where appropriate
Massachusetts Executive Order 149 and Chapter 21 of Massachusetts General Laws (MGL)	DCR	Executive order designates the Massachusetts Water Resources Commission as the state coordinating office for the NFIP. Under MGL Chapter 21, the Department of Environmental Management Division of Water Resources serves as support staff for the Water Resources Commission. In 1980, the Flood Hazard Management Program was created within the Division of Water Resources to be the NFIP coordinating office. The Department of Environmental Management is now the Department of Conservation and Recreation.	Consistently assists flood-prone communities in obtaining and maintaining participation in NFIP and assists property owners in making sound decisions related to flood insurance purchase and coverage. This encourages flood mitigation activities that will reduce the risk of flood damage to existing property.	Unchanged

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Mitigation-Related Grants for Plans & Projects				
Hazard Mitigation Grant Program	SHMT	Established pursuant to Section 404 of the Stafford Disaster Relief and Emergency Relief Act (PL 100-707), this program provides matching grants (75% federal, 25% non-federal) for FEMA-approved hazard mitigation projects following a Presidential declared disaster. These grants are available to state, local and tribal governments as well as eligible non-profit organizations.	Program implementation continues as part of the Commonwealth’s Mitigation Program. A way to improve the implementation of the HMGP Program is to complete a FEMA-approved state hazard mitigation plan could more than double the available HMGP funding.	. One improvement to the implementation of HMGP in 2012, the Project staff reviewed submitted local and multijurisdictional mitigation plans to help in the identification of possible projects.
Pre-Disaster Mitigation Program Grants for Mitigation Planning and Projects	SHMT	This all hazards mitigation grant program provides funding for hazard mitigation planning and projects. Originally allocated to states under a formula based on risk estimates, these matching grants (75% federal, 25% non-federal) for FEMA-approved hazard mitigation projects are now awarded through an annual national competition. Provides critical funding for multi-jurisdictional plans with local annexes to be developed to help identify potential hazard mitigation projects and for mitigation projects	. There has been demonstrated success in this programs all 13 regional planning agencies at least once to develop regional and local hazard mitigation plans. Continued funding allows for ongoing focus on repetitive loss properties and complements current funding under the PDM and HMGP programs	One improvement to the implementation of PDM in 2012, the Project staff reviewed submitted local and multijurisdictional mitigation plans to help in the identification of possible projects.

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Flood Mitigation Assistance Planning & Project Grants	SHMT	Since 1997, this program has provided annual pre-disaster funding for developing local flood mitigation plans and corresponding flood mitigation projects on a cost-shared basis (75% federal, 25% non-federal). Program focuses on mitigation of NFIP repetitive loss properties. Program is often the sole source of funding for flood mitigation plans and projects, which have resulted in cost savings for communities and property owners	This program will be evaluated in the next update due to the very recent changes in BW 2013.	Updated. Major Changes have occurred in FMA. Now, SRL is included in the program. As of December 2012, Massachusetts has funded more than 15 plans and 7 projects.
Legislative Pre-Disaster Mitigation		Non-Competitive Earmark, the National Legislative Pre-Disaster Mitigation Fund to assist states and local governments in implementing cost-effective hazard mitigation activities that complement comprehensive mitigation programs, reduce injuries, loss of life, and damage and destruction of property.	The state has had limited applications for this funding. Program implementation continues when funded as part of the Commonwealth's Mitigation Program	Unchanged.
Severe Repetitive Loss	SHMT	This program targets severe repetitive loss residential structures insured under the NFIP with up to a 90% FEMA share for mitigation projects.	n/a	This program has been eliminated as of 2013
Massachusetts Statewide Matching FEMA Assistance	Legislature	Following a Presidential disaster declaration, the Commonwealth may contribute a portion of the 25% non-federal share for federal Infrastructure Support funds.	Very effective. Assists in funding cost-effective measures that reduce or eliminate continued impacts from various types of disaster events.	Ongoing effort as funding allows
Massachusetts Special Appropriations Following State Disasters	Legislature	While there is no separate state disaster relief fund in the Commonwealth, the legislation may enact special appropriations for communities sustaining damage following natural disasters that do not reach the level of a federal disaster declaration.	Very effective. Assists in restoring the local communities impacted by disasters for events not rising to the level of a federal disaster.	Ongoing effort as funding allows

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Massachusetts State Revolving Fund	Massachusetts Executive Office of Energy and Environmental Affairs	Through the Executive Office of Environmental Affairs, grants may be provided to assist communities in funding stormwater management projects. Funding opportunities for stormwater management projects help to minimize or eliminate flooding in areas of poor drainage.	This program successfully promotes funding for mitigation projects.	Ongoing effort
PARC Program	Massachusetts Executive Office of Energy and Environmental Affairs	Annual program that purchases private property to be used for open space, wetland protection, and floodplain preservation.	Very successful and well managed. Shortly after establishing the program, in excess of 100,000 acres had already been acquired, which has reduced the impact of flood issues within those areas.	No changes in the program.
Hazard Identification & Mapping				
Massachusetts Statewide Mitigation Planning Strategy – regional and local risk analysis	MEMA and Regional Planning Agencies	The Commonwealth continues to partner with and fund multi-jurisdictional hazard mitigation plans with local annexes for all 13 Massachusetts regional planning agencies. These plans will include hazard identification, risk assessment, and maps.	Improvements needed. One possible improvement would be to ensure new data from multi-jurisdictional plans will assist in better identification of critical facilities and other structures, which may be at risk from natural hazards. These data may be used by other state agencies as other plans are developed.	Ongoing effort

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Massachusetts CZM Historical Shoreline Change Project	CZM	<p>The CZM Shoreline Change Project illustrates how the shoreline of Massachusetts has shifted between the mid-1800s and 2009. Using data from historical and modern sources, up to eight shorelines depicting the local high water line have been generated with transects at 50-meter (164-foot) intervals along the ocean-facing shore. For each of these transects, data are provided on the net distance of shoreline movement, shoreline change, dates, and uncertainty values.</p>	<p>Measures the changes in the state's coastline as a result of erosion and accretion. Assists in identifying potential areas and structures at high risk from coastal erosion and shoreline change.</p> <p>Utilized by many stakeholders and is updated as need.</p>	Update completed 2013
Massachusetts Risk MAP Business Plan	DCR	<p>Developed by DCR as part of FEMA's nationwide program to update the maps of flood zones in most communities. Flood Insurance Rate Maps and the accompanying Flood Insurance Study data are used in the administration of the minimum requirements of the NFIP. Massachusetts cities and towns rely heavily on the flood hazard information contained in the FIRMs and Flood Insurance Study for review of proposed development.</p>	<p>Business plan includes a strategy and implementation schedule for the update of FIRMs throughout Massachusetts. This plan has been successful and has a process to make changes if needed to ensure that the administration is effective.</p>	Ongoing effort with FEMA. See Flood profile for 2013 map status.
Massachusetts Ocean Resource Information System	MassGIS and CZM	<p>The Massachusetts Ocean Resource Information System, is an online mapping tool to search and display spatial data pertaining to the Massachusetts coastal zone; specifically, tide gauge stations, marine protected areas, access points, eelgrass beds, etc.</p>	<p>It is very beneficial to identify coastal infrastructure. This has assisted in all emergency management planning processes.</p>	Updated since last plan

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Public Safety				
State Building Code (780 Code of Massachusetts Regulations (CMR))	State Board of Building Regulations & Standards/	Massachusetts State Building Code covers the entire state, applies to both public and private construction, and is administered through the local building inspectors with state oversight. Section 3107 of the State Building Code contains most of the NFIP construction requirements related to buildings or structures.	NFIP standards are an integral section of the state building code, ensuring that all new construction and substantial improvements meet national flood resistant standards. Many communities have enacted stricter standards under their local floodplain ordinances. Allows for the application of NFIP standards on all new construction of buildings and structures throughout the Commonwealth.	Updated. In 2008 the code was updated to include several new components that are related to natural hazards, including flooding and wind. In 2013, Massachusetts was recognized for its progressiveness with respect to building codes.
Emergency Watershed Protection Program	USDA Natural Resource Conservation Service (NRCS)	Provides technical and financial assistance to localities to reduce vulnerability of life and property in small watersheds damaged by severe natural events.	Allows immediate action to stabilize storm damage in streams following a federal declared natural disaster.	Unchanged
Massachusetts Dam Safety Program, Ch. 330, Acts of 2002; 302 CMR 10	Massachusetts Dam Safety	Inspects and registers the 2,900 dams in the Commonwealth. These structures require continual maintenance, which is a challenge to state and local governments. Dams need continual inspection and maintenance schedules.	There may be future opportunities for the Commonwealth and local governments to partner with NRCS to continue ongoing inspections and repairs. Helps ensure the structural integrity of dams, thus preventing downstream flood loss.	Unchanged
U.S. Army Corps of Engineers Dam Safety Program	U.S. Army Corps of Engineers	Built by the U.S. Army Corps of Engineers, these structures (dams, dikes, seawalls, and protection barriers) protect many cities in Massachusetts from riverine and tidal flooding. The Corps of Engineers assists the Commonwealth and local governments in conducting annual inspections.	Effective. Since completion, these structures have prevented flood damage in major Massachusetts urban areas estimated at millions of dollars.	Unchanged

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
PL 566 flood control dams, under state and local control and maintenance	USDA-NRCS	32 small flood control dams that provide flood control to small watersheds in the central and western sections of the Commonwealth.	Very valuable. The Commonwealth continues to inspect state-owned PL 566 dams and provides flood protection to watersheds susceptible to high flood flow.	Unchanged
Massachusetts Wildfire Program, MGL Chapter 48: Sections 8 through 28C	DCR Forest Fire Bureau	Carries out a comprehensive program of wildfire prevention, suppression, and education through the state fire bureau and municipal forest wardens.	This program is critical and reliable as it is the primary vehicle to reduce losses from wildfire.	Unchanged
State Fire Assistance; the Cooperative Forestry Assistance Act (PL 95-313), Volunteer fire Assistance, and Federal Excess Property program	DCR Forest Fire Bureau	USDA Forest Service provides a wide range of grants to states for wildfire prevention, training, and education programs; federal excess firefighting materials; technical assistance and grants to communities with fewer than 10,000 population for forest fire related purposes	A collaborative programs that provides critical support to local wildfire prevention programs.	Unchanged
Mutual Aid Agreements	Northeastern Forest Fire Protection Commission	Massachusetts is a party to mutual aid agreements with other state and provincial forest fire control agencies.	Enables Massachusetts to call upon additional out-of-state resources to combat extreme conflagrations in Massachusetts. An improvement to this program could be the creation of Mission Ready Packages.	Massachusetts was called on to assist in numerous training and real events in the past three years
Massachusetts Fire Academy	Massachusetts State Fire Marshal	The Massachusetts Fire Academy, operated by the Office of the State Fire Marshal, provides instruction on methods of fire suppression and specialized training to municipal fire fighters to qualify them for the U.S. Forest Service Red Card, which is required for deployment to any out of state fire.	Very effective and accomplished. Well-trained and educated firefighters for both structural and wildfires will more effectively and safely extinguish such fires and prevent future fires.	Unchanged

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Fire Management Assistance Grant Program	Massachusetts State Fire Marshal	The Commonwealth annually signs an agreement with FEMA for this program under Section 420 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.	The Commonwealth must have a signed and up-to-date FEMA-State Agreement and a Wildfire Management Plan before receiving federal funding under approved requests for Fire Management Assistance declarations.	Unchanged
Title III, Chapter 29, Section 2DDD Hazardous Materials Teams	Massachusetts State Fire Marshal	Allocation of funding by state fire marshal for mitigation of hazardous-material emergency response incidents	The funds provide for reimbursement of all reasonable costs associated with hazardous-material mitigation efforts. New, evaluation n/a.	New
Planning & Environmental Protection				
Massachusetts Zoning Enabling Act MGL Ch. 40A		The Zoning Act was enacted in 1975 to facilitate, encourage, and foster the adoption and modernization of zoning ordinances and bylaws by municipal governments and to establish standardized procedures for the administration and promulgation of municipal zoning laws.	The act itself was amended in 2010 to improve the law.	Unchanged in this cycle.
Massachusetts Environmental Policy Act MGL Ch. 30, Sec. 61-62h; 301 CMR 11.00	Executive Office of Energy and Environmental Affairs (EOEEA)	The primary state environmental review process for state actions, projects with state funding, or projects requiring permits or licenses from state agencies. SHMT has representation on MEPA reviews.	Effective in ensuring that major development projects being contemplated have considered applicable flood protection laws and regulations.	Unchanged

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Massachusetts Wetlands Protection Act MGL Ch. 131, Sec. 40; 310 CMR 10.00	MassDEP	Establishes state policy for protecting the Commonwealth's wetland resource areas by limiting development in wetland resource areas and within a 100-foot buffer zone. Wetland resource areas include the 100-year coastal and riparian flood hazard areas identified by FEMA.	Very effectively and appropriately limits new and expanded building in the Commonwealth's coastal and wetland resource areas including lands subject to flooding.	Unchanged. Additional "effects on loss" language was added to strengthen the plan's description.
Massachusetts Rivers Protection Act; MGL Ch. 258-Acts of 1996; incorporated into 310 CMR 10.00	MassDEP	Establishes state policy for protecting the natural integrity of the Commonwealth's rivers and establishes open space along the rivers. The Act regulates activities within the Riverfront Resource Area extending 200 feet from the edge of each bank.	Effectively aligns with this plan because two of the eight interests promoted by this Act are providing flood control and preventing stormwater damage. Very effective .This Act expands the area along the Commonwealth's rivers in which flood control aspects of a proposed project are considered.	Unchanged
Massachusetts Inlands and Coastal Wetlands Restriction Acts (MGL Ch. 130, Sec. 105) and inland areas (MGL Ch. 131, Sec. 40A)	MassDEP	Records at the Registry of Deeds restrictions on individual property deeds against future development of coastal wetlands on Cape Cod, some towns on the south coast, and in the Charles River basin. The program now focuses on restoring wetlands.	Further protects critical coastal wetlands and barrier beaches from development. Reduces the amount of new development in high risk coastal areas that could be affected by coastal flooding, erosion, and high winds.	Unchanged.
EOEEA: Community Preservation Act	EOEEA	Encourages cities and towns to undertake the purchase of open space to preserve natural resources.	Very good collaboration that allows for the preservation of open space that also serves as flood storage areas. Also, allows for the potential purchase of floodplains and wetlands to prevent future building of potential flood-prone structures.	Unchanged. The Commonwealth continues to provide technical assistance to participating communities and other communities interested in passing a local preservation act.

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Coastal Development and Use-Chapter 91 Program; (MGL Ch. 91)		Protects the coastal tidal area for public open space purposes and regulates new and expanded construction within this area.	Very effective tool for risk reduction by restricting development along coastal shores, which are high hazard areas.	Unchanged
Massachusetts -Title 5/Septic System Management Title 5, (310 CMR 15):	MassDEP	Establishes minimum standards for the subsurface disposal of sanitary sewage. Enforced by MassDEP and local boards of health. Communities may adopt standards more restrictive than the state requirements.	Title 5 is very effective and administered to mitigate losses due to adverse effects of improper sewage treatment by strict requirements for placement and construction within high hazard flood areas. Helps to minimize property damage as well as environmental and health risks that could occur from improperly built septic systems in high hazard flood areas.	Ongoing
U.S. EPA Stormwater Management Program	U.S. EPA	Provides for 255 of 351 Massachusetts municipalities to prepare Phase II Storm Water Management Plans.	These plans directly address the major cause of flood damage loss in non-coastal communities in the Commonwealth.	Unchanged
Massachusetts CZM (Public Law 92-583, Section 306)	Massachusetts CZM	Undertakes comprehensive coastal education and protection programs. CZM ensures that projects located in or affecting the coastal zone are in compliance with CZM enforceable program and policies	New revisions have made the agency more adaptable and more flexible to better serve the municipalities.	Updated program plan and regulations
Massachusetts CZM Executive Order 181, Barrier Beach Protection (1980)	Massachusetts CZM	This Executive Order discourages further development on barrier beaches by limiting state and federal funding for new support facilities, gives priority status for relocation assistance to storm-damaged barrier beach areas, and encourages public acquisition of barrier beaches for recreational purposes.	Effective. Recognizes that human-induced changes to barrier beaches decreases the storm damage prevention and flood control capacities of these dynamic coastal areas.	Assists in reducing or limiting development in high risk areas for coastal flooding, erosion, and high winds.

TABLE 17-2. 2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY				
Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Massachusetts CZM State Rapid Response Storm Damage Assessment Team	Massachusetts CZM	The team consists of coastal planning and engineering experts who are on call to conduct damage assessment surveys of coastal areas immediately following storm events.	Valuable assessments provide state and federal emergency managers with valuable information of coastal storm damage within several hours of a storm event, allowing better targeted response and recovery assistance.	This team continues to be used several times a year as coastal storm events occur.
State Sustainability Program, Executive Order No. 438, July 2002	EOEEA	This program helps state agencies minimize the environmental impacts of their operations and activities and promote innovative sustainable practices.	By sustaining the environment and by implementing long-range planning, more hazard mitigation measures may be implemented by state agencies.	With tens of thousands of employees, hundreds of facilities, thousands of buildings and vehicles, and a multi-billion dollar budget, state government can achieve significant savings in energy, water, and materials use through greater efficiency and effective long-range planning.
Land Acquisition/ Open Space Program-	EOEEA	This effort allows environmental agencies to acquire land for open space purposes to include outdoor recreation, promoting biodiversity, and protecting the natural resources of the Commonwealth.	Effectively promotes flood water retention and flood loss reduction by preserving many critical parcels along the coast and rivers of the Commonwealth as open space.	This program continues to receive funding from the state capital funding plans.
Massachusetts Climate Change Adaptation Report	EOEEA	This report provides a framework for assessing a suite of strategic, long-term solutions designed to enable neighborhoods and natural resources to adapt to climate change while striving to mitigate greenhouse gas emissions.	Provides a mechanism for addressing impacts of climate change (such as sea level rise) through identification, development, and implementation of actions enhancing adaptation to climate change issues. Changes will continue to be needed to keep up with the evolving demands on this topic.	New to plan (2013)

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Cultural & Historic Resources				
National Historic Preservation Act of 1966 (36 CFR Part 800 – Protection of Historic Properties)	Massachusetts Historic Commission	Massachusetts Historic Commission administers the National Historic Preservation Act Section 106 review process for all proposed hazard mitigation projects submitted to the federal government under the HMGP, FMA, PDM, and Severe Repetitive Loss programs. Properties subject to Section 106 review include all properties listed on the National Register of Historic Places and all properties believed to be eligible for listing in the National Register.	Ensures that FEMA-funded mitigation projects achieve loss reduction while preserving the historic integrity of the listed properties. Administered through the Massachusetts Historic Commission. Close coordination is facilitated through the Commission's director being a member of the SHMIC.	By focusing on cultural resources, hazard mitigation will reduce future losses of economic, cultural, and historical facilities that are vital to many Massachusetts communities. Also ensures that new hazard mitigation projects will not adversely affect cultural and historic sites.
State Board of Underwater Archaeological Resources	State Board of Underwater Archaeological Resources	The Board provides specialized technical assistance in support of project planning and environmental compliance as part of the review process for underwater archaeological resources.	n/a	New Through permitting, the purpose of Board is to preserve, recognize, and protect resources of substantial archaeological or historical value to the Commonwealth.
Emergency Assistance Program for Massachusetts Libraries	Massachusetts Board of Library Commissioners:	The Massachusetts Board of Library Commissioners administers a grant program for libraries to undertake flood loss prevention actions.	One staff person works full time on mitigation activities, and the Massachusetts Board of Library Commissioners provides an important source of funds for mitigation actions.	This program continues to provide technical assistance on an as needed basis to many communities throughout the Commonwealth.

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Massachusetts Board of Library Commissioners: Emergency Assistance Program	Massachusetts Board of Library Commissioners	A program of education and training regarding preparedness, mitigation, response and recovery; caches of supplies; technical assistance; and freezing and drying capabilities for affected materials. The last component is limited to public libraries. A Weather Alert distribution list permits the agency to provide a heads up to the cultural heritage community regarding weather events that could impact their facilities and collections.	n/a	New. One staff person spends a considerable amount of time dealing with disaster mitigation, preparedness, response, and recovery activities for these institutions. This role is an important one in educating the cultural heritage community about disaster mitigation
Cultural Resource Protection	Coordinated Statewide Emergency Preparedness for Massachusetts (COSTEP-MA)	Cultural resources exist throughout Massachusetts, are located in a wide variety of buildings and geographical locations, and are threatened by flooding and other natural hazards. COSTEP-MA promotes proactive steps to reduce losses from natural hazards, especially flooding or water damage following fires but also including all such hazards, through cooperative team-building activities in communities and through educational activities within the cultural heritage and emergency management communities.	COSTEP-MA has worked to develop an annex to the Commonwealth's Comprehensive Emergency Management Plans and to promote education and cooperation in communities to enhance the protection of cultural resources from natural disasters. This is a progressive and engaged group that is quickly becoming a national model.	New

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Technical Assistance				
Various types of technical assistance	Massachusetts State Mitigation Team at DCR & MEMA	A cooperative program between two state agencies, which has been in existence since 1993. Allows for the sharing of staff and agency resources in support of state and federal hazard mitigation programs.	Both agencies work cooperatively to provide hazard mitigation grants and project management, especially ongoing technical assistance, to communities, regional planning agencies, and other state and federal agencies participating in mitigation programs statewide, especially the PDM program, the HMGP, and FMA program.	The Commonwealth continues to provide technical assistance on hazard mitigation grants and projects on an as-needed basis, with a recent focus on working with regional planning agencies throughout the Commonwealth to complete the Statewide Mitigation Planning Strategy (See Section 2).
StormSmart Coasts Program	Massachusetts Office of Coastal Zone Management	This is a technical assistance program that was designed to help communities address challenges arising from erosion, storms, floods, sea level rise, and other climate change impacts. The program operates on two levels: a website that provides a suite of tools for successful coastal floodplain management; and direct technical assistance to communities.	This program provides all 78 coastal communities with valuable information needed to improve their floodplain management strategies. It has helped communities enhance their regulatory language, planning, and outreach efforts to address coastal flooding. Additionally, it has helped a community incentivize elevating structures out of the flood zone.	New studies have been completed and released during the 2010-2013 planning cycle.
Floodplain Management Services and Section 22 Planning Assistance to States Program	DCR	U.S. Army Corps of Engineers provides floodplain management and water resources technical assistance to states. This program is coordinated in Massachusetts by the DCR and the Water Resources Commission. Provides a continuing source of technical assistance for flood loss reduction plans and projects.	The Commonwealth continues to provide information and technical assistance to communities to help identify potential projects that would qualify for funding constantly improving with each year.	. Assistance was provided in this planning cycle.

**TABLE 17-2.
2013 UPDATED STATE CAPABILITY ASSESSMENT SUMMARY**

Existing Mitigation Effort	Responsible Agency or Department	Description of Capability	Evaluation on effect on Loss and/or Risk Reduction	Update 2013 Notes, Amendments, Comments
Landslide Data Enhancement Project	University of Massachusetts	Landslide data sets that provide information concerning landslide issues within the Commonwealth.	While still in its infancy, the study is intended to capture information with respect to landslide issues to assist communities by providing information concerning areas susceptible to landslide events, which can be used for land use planning and zoning requirements	New
Other Programs				
Community Development Block Grants (CDBG)	U.S. Department of Housing and Urban Development (HUD)	In 1997 and 1998, additional funding for hazard mitigation projects became available under HUD's Community Development Block Grant Disaster Recovery Initiative	More collaboration is needed in this program to try and expand funding opportunities and maximize benefits of this funding.	Unchanged
National Earthquake Hazard Reduction Program NEHERP	Weston Observatory, Boston College	Monitor earthquakes that can affect Massachusetts. Deliver timely information on the location, magnitude, and impacts of regional earthquakes. Assess the potential occurrences and impacts of future earthquakes	Improvements are needed. Additional federal and state resources are needed to enhance seismic monitoring and to increase the delivery speed of accurate earthquake information to state agencies	.unchanged.
Stream Gauge Monitoring)	U.S. Geological Survey (USGS)	USGS researches processes that trigger natural hazards and manages real-time river flood stage monitoring and warning systems. USGS maintains 108 real-time stream-gauging stations in cooperation with state agencies. Real time river flood stage monitoring is essential for the operation of flood response plans.	Improvements are needed. More funding should be made available for the installation of stream gauges in smaller urban rivers throughout Massachusetts	Unchanged

17.4 LOCAL CAPABILITY ASSESSMENT

Local municipalities, rather than counties, have the primary authority over land use and development in Massachusetts. Local governments for Massachusetts’ 351 communities have a vital role in natural hazards mitigation, especially in floodplain management. Municipal departments and managers have the legal responsibility to implement local floodplain ordinances or bylaws. These critical programs include National Flood Insurance Program standards, Massachusetts State Building Code, Wetlands Protection Act, Title 5 of the State Environmental Code (wastewater disposal), and many other local mitigation policies.

Several types of plans and programs within the land use and environmental sector require communities to develop and maintain strategic or action plans to guide land use and development. These plans are the vehicle in which local mitigation actions can be integrated into everyday planning, zoning, and future improvements. For example, many communities have used local mitigation actions to update subdivision regulations or bylaws to include or clarify requirements relating to the NFIP or other flood-reduction measures.

Towns and cities in Massachusetts develop and enforce local laws and policies (including disaster recovery and mitigation), manage municipal budgets, and implement hazard mitigation planning and projects. Table 17-3 is an overview of departments found in most Massachusetts municipalities, based on review of regional and local mitigation plans. The table lists existing mitigation measures and discusses their effectiveness and possible opportunities for improvement. This analysis helps the SHMT understand the strengths and challenges faced by the local governments. A major challenge in smaller communities is that there are few paid part-time staff, with diverse responsibilities, or volunteers fulfill several functions.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(c)(3)(ii), which states the following:

Plan Content. To be effective the plan must include a Mitigation Strategy that includes a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

**TABLE 17-3.
LOCAL CAPABILITY ASSESSMENT SUMMARY**

Building Departments and Local Building Inspectors	
Explanation	The building inspector implements and enforces the Massachusetts State Building Code (specifically Section 3107, “Flood Resistant Construction”), which incorporates NFIP construction standards. The state building code includes sections on wind, snow, structural loads and seismic retrofitting and ensures that NFIP standards and other mitigation standards are applied uniformly statewide. The building inspector also enforces local bylaws, especially to prevent floods. For instance, the building inspector is responsible for administering municipal zoning ordinances, including those addressing floodplains.
Effectiveness	Ensures that NFIP standards and other mitigation standards are uniformly applied across the communities of the Commonwealth. Building inspectors may often find problems or violations of the State Building Code related to other hazards in addition to flooding.
Opportunities	There may be more opportunities for the Commonwealth to provide additional training to local building inspectors concerning new hazard mitigation measures or increasing the local enforcement and encouragement of sound building practices

**TABLE 17-3.
LOCAL CAPABILITY ASSESSMENT SUMMARY**

Public Works Departments or Town Engineers	
Explanation	Public works departments or water and sewer departments, which are primarily responsible for municipal drainage and stormwater management systems, take the lead in ensuring communities' compliance with the EPA's Phase II Stormwater Regulations (National Pollutant Discharge Elimination System).
Effectiveness	Because stormwater is one of the major flood hazards in Massachusetts, ongoing maintenance and upgrading of local stormwater systems by public works departments is crucial to reducing flood risks. Public works staffs are integral in implementing local hazard mitigation plans, especially in identifying and implementing local hazard mitigation projects
Opportunities	A number of smaller communities do not have significant engineering or public works capabilities. Communities with a very small population and highly rural communities may not be required to comply with the National Pollutant Discharge Elimination System Phase I or II standards and may not regulate stormwater or surface water discharges as vigorously as those that must comply with the standards.
Conservation Commissions	
Explanation	Conservation commissions have primary responsibility for implementing the Massachusetts Rivers Protection Act (MGL Ch. 258, 310 CMR 10.58) and the Massachusetts Wetlands Protection Act (MGL Ch. 131, Section 40; 310 CMR 10.00). A conservation commission reviews, approves or denies applications for any project in the regulatory 100-year floodplain, in the floodplain of a small water body not covered by a FEMA study, or within 100 feet of any wetland or 200 feet of any river or stream (except in the case of densely developed urban areas, where buffers may extend only 25 feet from a river or stream).
Effectiveness	These regulations contain performance standards, which address flood control and storm damage prevention. For instance, the Wetlands Protection Act restricts development in wetlands and within a 100-foot buffer zone. Since most wetlands are within the 100-year floodplain, this adds an extra layer of protection to promote flood loss protection.
Opportunities	Local conservation commissions are required to review development with potential impacts on any type of river, stream, pond or wetland. These commissions play an important role in enforcing regulations that minimize flood impacts. Continuing to enforce the requirements of the regional planning agencies and other rules will continue to ensure proper development and lessen flood impacts.
Planning Boards, Planning Departments, or Town Planners	
Explanation	Planning boards and departments have general planning authority under the MGL Ch. 41 Zoning Act and implement local subdivision regulations. Their responsibilities include recommending land use regulations to protect public health, safety, and welfare. A planning board is the primary local vehicle to ensure that new development incorporates federal and state stormwater best management practices. Planning boards maintain floodplain bylaws and ordinances to address current floodplain issues and update them to ensure compliance with state and federal regulations. They often coordinate the hazard mitigation planning process and the implementation of hazard mitigation plans. These boards provide professional expertise in plan development, bylaw drafting, and grant application.

TABLE 17-3. LOCAL CAPABILITY ASSESSMENT SUMMARY	
Effectiveness	Planning boards can often bring in regional planning perspectives as well as information concerning new development. A planning board is able to adopt its own subdivision rules and regulations without an action at the town meeting.
Opportunities	There may be more opportunities for the Commonwealth to provide additional training to local planners concerning hazard mitigation planning opportunities. In many communities, the planning department coordinates the hazard mitigation planning process and the implementation of hazard mitigation plans.
Boards of Health	
Explanation	This local board implements the State Environmental Code, Title 5, and 310 CMR 15: <i>Minimum Requirements for the Subsurface Disposal of Sanitary Sewage</i> . The community may adopt local board of health requirements that are more restrictive than the state requirements. Title 5 protects public health and mitigates losses due to adverse effects of improper sewage treatment in high hazard areas. These boards are involved in issues related to water quality and infectious diseases following disasters.
Effectiveness	Some communities opt to adopt local board of health requirements that are stricter than the state requirements. At this time, the effectiveness of local boards of health is unknown.
Opportunities	By involvement of this board, additional public health issues may be included in the mitigation planning process. Title 5 protects public health and mitigates losses due to adverse effects of improper sewage treatment in high hazard areas.
Boards of Selectmen or City Council	
Explanation	Massachusetts communities with a city form of government are led by elected mayors and city councils. An elected board of selectmen governs towns. In most towns, town meetings of all registered voters meet at least annually. This tradition from Colonial times approves town budgets and all land use and zoning ordinances and regulations.
Effectiveness	These bodies are the chief elected officials of each municipality and provide leadership and approval for hazard mitigation grant applications, plans, and projects. The city council or board of selectmen must adopt the local pre-disaster mitigation plan. Their approval also is necessary for hazard mitigation grant applications and potential projects.
Opportunities	More education needed concerning the benefits of hazard mitigation planning and projects.
Emergency Management Director	
Explanation	Each Massachusetts community is required to appoint an emergency manager (Chapter 639 of the Acts of 1950) who is primarily responsible for local preparedness, mitigation, response, and recovery, as well as mutual aid for natural and manmade hazards. Emergency managers play a primary role in developing local comprehensive emergency management plans required by Massachusetts state law, as well as other plans required by MEMA and FEMA.
Effectiveness	Each community has an emergency management director who is the key point of contact for all MEMA- and FEMA-related business. This is a key link for outreach and involvement in mitigation planning and grants.

**TABLE 17-3.
LOCAL CAPABILITY ASSESSMENT SUMMARY**

Opportunities	Emergency medical dispatchers could have a more active role in the recovery and mitigation process in their communities. More education is needed concerning the benefits of hazard mitigation planning and projects. Most emergency medical dispatchers are unpaid volunteers or have other full-time jobs. More resources for the local emergency medical dispatchers would allow for enhanced planning and overall local capabilities.
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An analysis was conducted to compare and collate the common existing hazard mitigation measures of the approved mitigation plans in the Commonwealth. The following are hazard mitigation measures appearing in a large majority of the mitigation plans as of January 2013:

- Capital improvement planning
- Emergency operations equipment
- EPA Phase II stormwater treatment
- Floodplain bylaw
- Beaver dam mitigation efforts
- Bridge mitigation projects
- Structural mitigation projects
- All hazards tree maintenance
- Local regulations—local bylaw cluster subdivisions, soil conservation, etc.
- Coastal erosion mitigation efforts (coastal community plans)
- State regulations—State Building Code, Wetlands Protection Act.

Additional information concerning local capabilities may be found in Section 3 and Appendix F.

17.5 PROGRAM MANAGEMENT AND IMPLEMENTATION

17.5.1 Implementation of Mitigation Program

The Commonwealth of Massachusetts has been committed to developing and implementing measures to reduce the impact of natural disasters since 1978 when the Commonwealth first joined NFIP. As of 2012, 336 out of 351 (96 percent) of Massachusetts communities participate in this program. In addition, as of 2012, 98 percent (86 out of 88) of communities receiving new flood maps have adopted the maps by the effective date; the remaining two communities adopted the maps and were reinstated within one month of the effective date. Extensive outreach has been conducted with respect to NFIP enrollment in light of FEMA's flood mapping efforts throughout the Commonwealth (see Sections 2 and 3 and the Flood Hazard Profile for additional information on NFIP implementation).

In addition to the NFIP, the Commonwealth has had a FEMA-approved state hazard mitigation plan since 1986. As of December 31, 2012, 39.3 percent of municipalities had plans in place, 8.2 percent had conditional approval, 11 percent were approved by FEMA pending adoption, 6.5 percent were in review by MEMA, and 13 percent had expired plans. Implementation of other mitigation efforts is also supported through the integration of other state agencies, programs, policies, and support provided by non-government and private non-profit agencies. Additional information concerning integration of programs is contained in Section 2.

Community Rating System Program

The CRS is a voluntary program within the NFIP that encourages floodplain management activities that exceed the 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. CRS activities (discussed below) 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 CRS program is administered by the Insurance Services Office (ISO) under contract to FEMA.

Massachusetts Uniform Minimum CRS Credit

The CRS provides Uniform Minimum Credit (UMC) for certain state laws, regulations, and standards that support floodplain management and have proven effective in reducing flood damage. As of the 2013 update, the UMC credit is in the process of being recalculated to reflect new criteria being incorporated into the 2013 CRS Coordinator’s Manual, which was not yet released at the time of this plan update. Table 17-4 summarizes UMC credit currently available to all Massachusetts communities under the CRS program, based on technical review by ISO. It also includes possible additional credit available for selected areas or activities. Credit for activities in the 400 series can increase based on the Community Growth Adjustment. The CRS requires participating communities to maintain elevation certificates, which provide an additional 56 points; 500 points are needed for Class 9.

ISO/CRS specialists and the communities need to determine which additional credits apply to their area. These UMCs do not necessarily apply to Tribal nations.

TABLE 17-4. CREDITS AVAILABLE THROUGH COMMUNITY RATING SYSTEM		
Activity	Element	Credit
Uniform Minimum Credit		
430	Protection of Floodplain Storage Capacity	70
430	State-Mandated Standards	10
450	Erosion and Sedimentation Control	30
630	State Dam Safety	51.6
Total		161.6
Possible Additional Credit		
430	Building Codes	TBD
430	State-Mandated Standards	TBD

Activity 430, Higher Regulatory Standards: Protection of Floodplain Storage Capacity

The Massachusetts Wetlands Protection Act awards 70 points for protection of floodplain storage capacity. Compensatory storage is required for all flood storage volume that will be lost as a result of a proposed project on or bordering land subject to flooding, when the loss will cause an increase or contribute incrementally to an increase, in the level of flood waters during peak flows.

- **Legal Basis**—State of Massachusetts Wetlands Protection Act, Massachusetts General Law (MGL) 310 CMR 10.00: Wetlands Protection, 10.57 (4), General Performance Standards (page 94) at <http://www.mass.gov/dep/service/regulations/310cmr10a.pdf>.
- **Verification**—ISO/CRS specialists will verify credit by reviewing permits, site plans, and compensatory storage plans for new developments in the regulatory floodplain.
- **Annual UMC Verification**—The community must certify each year that the provisions are being enforced.

Activity 430, Higher Regulatory Standards: State-Mandated Standards

State-mandated regulatory standards are awarded 10 points. Credit equals 0.10 times the sum of credit points for floodplain management regulatory standards (see Table 17-5). Total credit available for state-mandated standards is limited to 25 points.

TABLE 17-5. STATE-MANDATED STANDARDS		
Activity	Element	Credit
430	Protection of Floodplain Storage Capacity	70
450	Erosion & Sedimentation Control	30
	Total	100
	x 0.1	10
Source: Section 431.I. of the CRS Coordinator’s Manual.		

Activity 450, Stormwater Management: Erosion and Sedimentation Control

Requiring construction projects larger than 1 acre to use erosion and sediment control measures is awarded 30 points.

- **Legal basis**—Massachusetts Department of Environmental Protection rules on stormwater permitting at <http://www.mass.gov/dep/water/approvals/stormreg.htm>.
- **Verification**—ISO/CRS specialists will verify credit by reviewing permits and erosion control plans, and conducting field verification.
- **Annual UMC Verification**—ISO/CSR specialists will verify the regulations still are in effect.

Activity 630, State Dam Safety

State Dam Safety Program activities are awarded 51.6 points based on the Dam Safety Program Management Tool.

- **Legal basis**—DCR maintains an Office of Dam Safety and implements regulations (see <http://www.mass.gov/dcr/pe/damSafety/index.htm>)
- **Verification**—ISO/CRS specialists will verify that the community is in compliance with the State Dam Safety Program.
- **Annual UMC Verification**—FEMA’s Dam Safety Office annually verifies State Dam Safety credit.

17.5.2 Mitigation Measures and Projects

Implementing effective hazard mitigation in high-risk areas in the Commonwealth involves two general types of approaches: non-structural and structural. In support of efforts by municipalities, organizations, businesses, and private citizens to reduce damage after natural disasters, the Commonwealth's Hazard Mitigation Program emphasizes the use of a non-structural hazard mitigation approach before undertaking a structural approach. Massachusetts places a higher priority on funding non-structural projects. Although some non-structural hazard mitigation measures may be lower in cost (i.e. adoption of a floodplain ordinance), such measures may be very time intensive in terms of staff time and take several years to implement.

17.5.3 Non-Structural Hazard Mitigation Measures and Projects

Non-structural hazard mitigation is an approach that does not attempt to control or contain a natural hazard, but involves preventive actions that improve infrastructure to reduce damage or improve coordination of resources. The following are examples of non-structural projects:

- Building and construction design (Massachusetts State Building Code)
- Enforcement of building codes
- Planning and zoning
- Open space preservation and wetlands protection
- Floodplain development management (subdivision regulations, erosion control bylaws, floodplain ordinances)
- Stormwater management
- Relocation
- Acquisition
- Building elevation
- Floodproofing (barriers, dry floodproofing, wet floodproofing, elevation of essential utilities)
- Sewer backup protection insurance
- Erosion and sediment control
- Beach nourishment (through natural methods such as the placement of snow fencing and the planting of beach grass)
- Best management practices
- Weather forecasting
- Emergency measures (Comprehensive Emergency Management Plans for each community)
- Public information (flood map information, outreach projects, real estate disclosure, technical assistance, education programs).

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(c)(4)(iii), and §201.5(b)(2)(i) and (ii) which states the following:

To be effective the plan must include a section on the Coordination of Local Mitigation Planning that includes criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include:

- Consideration for communities with the highest risks.
- Repetitive loss properties.
- Most intense development pressures.

Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.

Requirement §201.5(b)(2)(i) and (ii): [The Plan must demonstrate] the State's project implementation capability, identifying and demonstrating the ability to implement the plan, including:

- Established eligibility criteria for multi-hazard mitigation
- A system to determine the cost effectiveness of mitigation measures, consistent with OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs

17.5.4 Structural Mitigation Measures and Projects

Structural measures are used to prevent a natural hazard, such as flooding, from reaching property. These measures are “structural” because they involve construction of man-made structures to control a hazard, such as a dam or sea wall to control water flow. Most structural projects can be very expensive and have other shortcomings, such as destruction of natural habitat by disturbing land and natural water flow, increased erosion of adjacent unarmored shorelines or river banks, extensive damage when subjected to a flood greater than that for which the project was designed, and requiring continuous and high cost maintenance. Examples of structural measures are dikes, drainage modifications, dams, and seawalls.

Over the past decade, the Commonwealth has realized the high cost and maintenance involved with building any new structural hazard mitigation projects. While the Commonwealth’s Hazard Mitigation Program emphasizes the use of non-structural approaches over structural approaches, the density of at-risk development in some areas combined with the high value of existing mitigation infrastructure (e.g., seawalls, drainage systems) at times makes it more cost-effective to upgrade existing structures to provide added levels of protection. In such cases a limited structural approach (e.g., upgrading an existing seawall or culvert) may be preferable to a non-structural approach.

17.5.5 Program Management Capabilities

FEMA certifies that the Commonwealth of Massachusetts has demonstrated that it has the capability to effectively manage FEMA-funded hazard mitigation grant programs. A copy of its most recent certification is shown in Figure 17-1.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.5(b)(iii)(A-D), which state the following:

Demonstrate that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs, including a record of the following:

- Meeting HMGP and other mitigation grant application timeframes and submitting complete, technically feasible, and eligible project applications with appropriate supporting documentation.
- Preparing and submitting accurate environmental reviews and benefit-cost analyses.
- Submitting complete and accurate quarterly progress and financial reports on time.
- Completing HMGP and other mitigation grant projects within established performance periods, including financial reconciliation.

CERTIFICATION FROM FEMA TO BE INSERTED WHEN RECEIVED

Figure 17-1. FEMA Certification of Massachusetts Hazard Mitigation Capabilities

17.5.6 Local Hazard Mitigation Measures

As local hazard mitigation plans are completed, either as annexes to a regional plan or as single-jurisdiction plans, local mitigation measures, and projects are incorporated into the SHMP Data Capture Tool. These local measures and projects, like the regional hazard mitigation measures and projects, will be reviewed and analyzed by the SHMT. Depending on future funding, the Commonwealth will provide communities with technical assistance as needed to implement cost-effective hazard mitigation measures. Section 3 and Appendix F of this SHMP summarize some of the strategies and actions from approved local and regional plans. Information used for this section is updated by the Commonwealth with input from participating communities after each grant funding cycle.

17.5.7 Tracking Hazard Mitigation Measures and Projects

Since 1991, Massachusetts has supported more than 300 hazard mitigation projects and plans with over \$92 million in federal funding from pre-disaster and post-disaster hazard mitigation grant programs, as summarized in Table 17-6. The Commonwealth emphasizes effectiveness in hazard mitigation, in part by marketing the grant programs to all eligible applicants and then working with them to develop the best possible projects. Section 3 describes the process of soliciting applications and working with applicants to develop their documents. For the HMGP, the Commonwealth typically receives applications for amounts far in excess of the amount of available funding. The Commonwealth selects and recommends for funding only the best and most cost-effective projects.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.5(b)(3), which states the following:

Demonstrate that the State effectively uses existing mitigation programs to achieve its mitigation goals.

**TABLE 17-6.
SUMMARY OF MITIGATION PROJECTS FUNDED IN MASSACHUSETTS**

Disaster Name/ Grant Type	Program Number	Date	Federal Funding	# of Projects	Status
Hazard Mitigation Grant Program					
Hurricane Bob	914	Aug-91	\$651,881	17	Closed
Winter Storm	920	Oct-91	\$626,406	10	Closed
Winter Storm	975	Dec-92	\$400,943	7	Closed
Flooding	1142	Oct-96	\$12,262,500	37	Closed
Flooding	1224	Jun-98	\$1,769,145	22	Closed
Flooding	1364	Apr-01	\$1,562,356	17	Closed
Flooding	1512	Apr-04	\$243,225	1	Closed
Flooding	1614	Oct-05	\$763,899	4	Open
Flooding	1642	May-06	\$2,600,528	14	Open
Nor'easter	1701	Apr-07	\$1,364,794	5	Open
Ice Storm	1813	Dec-08	\$8,325,842	26	Open
Flooding	1895	Mar-10	\$13,280,510	34	Open
Snowstorm	1959	Mar-11	\$3,805,002	14	Open
Tornadoes	1994	Jun-11	\$7,044,043	11	Open
Tropical Storm Irene	4028	Sep-11	\$5,481,585	TBD	Open
Snowstorm	4051	Jan-12	\$10,148,177	TBD	Open
Hurricane Sandy	4097	Oct-12	TBD	TBD	
Flood Mitigation Assistance					

TABLE 17-6. SUMMARY OF MITIGATION PROJECTS FUNDED IN MASSACHUSETTS					
Disaster Name/ Grant Type	Program Number	Date	Federal Funding	# of Projects	Status
FMA	FY 97		\$286,544	4	Closed
FMA	FY 98		\$238,428	3	Closed
FMA	FY 99		\$457,367	6	Closed
FMA	FY 00		\$240,713	5	Closed
FMA	FY 01		\$307,201	8	Closed
FMA	FY 02		\$173,081	3	Closed
FMA	FY 03		\$221,100	2	Closed
FMA	FY 04		\$291,601	3	Closed
FMA	FY 05		\$143,250	2	Open
FMA	FY 06		\$1,119,737	3	Open
FMA	FY 07		\$634,335	5	Open
FMA	FY 08		\$0	0	Closed
FMA	FY 09		\$240,889	1	Open
FMA	FY 10		\$65,369	1	Open
FMA	FY 11		\$0	0	Closed
FMA	FY 12		TBD	1	Pending
Pre-Disaster Mitigation					
PDM	FY 02		\$352,990	4	Closed
PDM	FY 03		\$222,497	4	Closed
PDM-C	FY 03		\$483,272	3	Closed
PDM-C DRU	FY 04		\$199,750	2	Closed
PDM-C	FY 05		\$4,346,890	13	Open
PDM-C	FY 06		\$255,750	2	Open
PDM-C	FY 07		\$162,000	1	Open
PDM-C	FY 08		\$3,000,000	1	Pending
PDM-Earmark	FY 08		\$100,000	1	Open
PDM-C	FY 09		\$516,421	4	Open
PDM-Earmark	FY 09		\$100,000	1	Pending
PDM-C	FY 10		\$949,583	4	Open
PDM-C	FY 11		\$335,764	4	Open
Severe Repetitive Loss Program					
SRL	FY 08		\$653,166	1	Open
SRL	FY 10		\$0	0	Closed
SRL	FY 12		\$335,305	1	Open
Community Development Block Grant					
CDBG	FY 97		\$3,977,888.72	12	Closed
CDBG	FY 98		\$1,494,878.76	2	Closed

In 1999, the SHMT developed a comprehensive database to track and monitor all open and completed hazard mitigation project and planning grants funded under the HMGP, FMA, HUD, and PDM programs.

This tool has allowed the Commonwealth to track and monitor project and plan timelines and completion dates. It allows the Commonwealth to track projects and plans by a specific grant program, by community, by project type, by project cost balances, and by other related data. For instance, the database allows for tracking by project type, such as dam improvements, stormwater management, elevation, etc.

17.5.8 Repetitive Flood Claims and Severe Repetitive Loss Programs

Repetitive Flood Claims

The Repetitive Flood Claims (RFC) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (Public Law 108–264), which amended the National Flood Insurance Act of 1968 (42 U.S.C. 4001). Up to \$10 million is available annually for FEMA to provide RFC funds to help states and communities reduce flood damage to insured properties that have had one or more claims to the NFIP. The Commonwealth of Massachusetts does not participate in the RFC program.

FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the applicant has demonstrated that the proposed activities cannot be funded under the FMA program. An application may be submitted for RFC funding if neither the applicant nor the sub-applicant can currently meet the FMA non-federal share requirement. For RFC, FEMA may contribute up to 100 percent of the project cost. The application and sub-application must include certification (e.g., a signed letter from an authorized local government official) explaining why the FMA cost sharing requirement cannot be met. If a project to mitigate the project property was previously identified on a sub-application for Hazard Mitigation Assistance (HMA) funding and the project was not funded, the applicant or sub-applicant must explain why the 25 percent non-federal cost share is no longer available for this project. RFC applicants and sub-applicants can apply only for project grants; planning and management costs are not eligible under this program. In accordance with 44 CFR Part 201, all applicants for RFC must have a FEMA-approved state or tribal (standard or enhanced) hazard mitigation plan by the application deadline and at the time of obligation of the grant funds.

Residential or non-residential properties that have received one or more NFIP insurance payments are eligible for RFC funds. Properties included in a sub-application must be NFIP-insured at the time of the application. Flood insurance must be maintained at least through completion of the mitigation activity.

Severe Repetitive Loss Program

The Severe Repetitive Loss (SRL) program is authorized by Section 1361A of the National Flood Insurance Act (42 U.S.C. 4102a), with the goal of reducing flood damage to residential properties that have experienced severe repetitive losses under flood insurance coverage and whose mitigation will result in the greatest savings to the NFIP in the shortest period of time.

Massachusetts does participate in the SRL Program. The Commonwealth manages this program similarly to the other grant programs it currently manages, with the addition of directed contact via phone or email to jurisdictions that have SRL properties to ensure that they understand the new program requirements. This program has significant importance to the Commonwealth, as the Commonwealth ranks at the top of the list nationwide for SRL properties.

A severe repetitive loss property is a residential property that is covered under an NFIP flood insurance policy and:

- a) That has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or

WHY THIS SECTION?

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

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

- A commitment to support local mitigation planning by providing workshops and training, State planning grants, or coordinated capability development of local officials, including Emergency Management and Floodplain Management certifications.

- b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any 10-year period, and must be greater than 10 days apart.

The SRL program can fund projects only; it cannot be applied to planning or management costs. In accordance with 44 CFR Part 201, all applicants for SRL must have a FEMA-approved state or tribal (standard or enhanced) hazard mitigation plan by the application deadline and at the time of obligation of the grant funds.

In order to be eligible for an increased federal cost share of up to 90 percent, the property that is being submitted for consideration must be an SRL property, and a FEMA-approved state or tribal (standard or enhanced) hazard mitigation plan that addresses repetitive loss properties must be in effect at the time of grant award. Guidance on addressing repetitive loss properties can be found in the *State Multi-Hazard Mitigation Planning Guidance* and in 44 CFR Part 201.4(c)(3)(v). A repetitive loss strategy must identify specific actions the Commonwealth has taken to reduce the number of repetitive loss properties, which must include severe repetitive loss properties, and specify how the Commonwealth intends to reduce the number of such properties. The hazard mitigation plan must describe the Commonwealth's strategy to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local hazard mitigation plans.

The Commonwealth's existing repetitive loss program does identify all repetitive and severe repetitive loss properties and provides that information to local communities as they develop their hazard mitigation plans. Repetitive loss data is available from the state NFIP coordinator through Bureau Net; strict protocols are in place to maintain confidentiality, of the information as required by the program. Jurisdictions requesting the information for inclusion in their mitigation plans are provided the data, which in turn allows them to develop specific actions to target repetitive loss properties as part of their overall strategy of resiliency.

The Commonwealth's repetitive loss program also includes outreach and training for local governments, as well as coordination with FEMA regional staff. Section 3 and Annex 2 provide additional information with respect to the technical assistance provided. The Flood Hazard Profile provides a comprehensive review of loss data for SRL properties, broken both at the community and county levels.

17.5.9 Mitigation in Post-Disaster Recovery Operations

Hazard mitigation is an integral part of the Commonwealth's post-disaster recovery operations. Staff from the MEMA Mitigation and Recovery Unit co-locates with mitigation staff from FEMA at joint field offices during immediate post-disaster operations. Staff from other state agencies that may have an interest or jurisdiction in the disaster and in recovery operations also co-locate at the joint field office. State and FEMA staffs work to identify mitigation opportunities through the Individuals and Households Program and the Public Assistance Program.

Program staff members often provide mitigation information to disaster victims. State and federal mitigation staffs work together to identify public education opportunities and use existing materials or develop new materials specific to the hazard and disaster event.

WHY THIS SECTION?

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

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

- A comprehensive, multi-year plan to mitigate the risks posed to existing buildings that have been identified as necessary for post-disaster response and recovery operations.

Public Assistance program staff encourages potential project applicants to identify mitigation elements in repair and restoration projects. Mitigation and public assistance program staffs often jointly conduct applicant briefings to discuss mitigation opportunities through both public assistance and hazard mitigation grant programs. State mitigation staff quickly disseminates letters of intent and information on the HMGP to potential applicants, and provide technical assistance to potential applicants on the grant application process. In addition, MEMA staff attends semi-annual Recovery and Mitigation meetings to discuss important aspect of the programs, changes in priorities, and lessons learned for disaster events.

MEMA's fiscal department ensures that all disaster and non-disaster FEMA funding is obligated and spent in accordance with all state and local regulations. Having a singular contracting and fiscal approval process ensures proper fiscal management. With recent reorganization at MEMA, the Disaster Recovery Manager now also oversees the Mitigation Unit, providing a seamless coordination with the implementation of FEMA PA, IA, and mitigation programs.

17.5.10 Mitigating Risks to Existing Buildings and Structures: Hazard Mitigation Project Success Stories in Massachusetts

Projects funded by the various funding streams will mitigate the risks posed to local buildings used for disaster response and recovery operations. This includes facilities used by first responders, school buildings used for evacuation centers, and water facilities needed by communities. Projects funded include enhanced drain systems in frequently flooded areas, road elevations, bank stabilization, enhanced control systems to protect utility infrastructure, flood-proofing, pump station retrofits, utility relocation, and dam retrofits. A detailed list of the projects funded during the 2010-2013 update cycle is in Section 3.

In both the 2010 plan and this 2013 update, actions have been developed to prepare enhanced data sets that can be used to better determine risks to critical facilities at the state and local levels. This includes the landslide study currently underway with the University of Massachusetts, which was a funded HMGP project. The Commonwealth has also identified data gaps through this update process, as noted in various portions of this SHMP. The gaps will be an area of focus during the 2013-2016 update of the plan.

The Commonwealth also places emphasis on highlighting successes in mitigation. As often as funding is available, the SHMT and FEMA intend to create pamphlets and brochures to highlight these successes. Examples of current and previous success stories, as well as copies of newsletters discussing mitigation efforts, may be found in Appendix C.

WHY THIS SECTION?

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

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

- A comprehensive description of how the State integrates mitigation into its post-disaster recovery operations

17.5.11 Framework for Implementing Hazard Mitigation

A number of Massachusetts state agencies and offices conduct hazard mitigation as part of their organizational missions. The legal foundation for such work is part of each agency's enabling legislation. Descriptions of many of the agencies' hazard mitigation functions, including their enabling legislation and current hazard mitigation measures, can be found in Table 17-2. Additional information is also contained within Section 2. This is an area in which the SHMT is attempting to enhance information through one-on-one outreach and through deployment of the 2013 survey. Specific questions were included in the survey to expand information in this regard. Agencies that responded to the survey did indicate proactive efforts supporting local and state mitigation efforts. More information on the survey results are available in Appendix D. Additional information on this topic may also be found in Section 2. The following sections describe examples of the legal framework currently in place in support of federal and state agencies' incorporation of hazard mitigation methods.

Floodplain Management Initiatives

Federal Executive Orders 11988 and 11990, *Floodplain Management and Protection of Wetlands*, require that federal agencies avoid direct or indirect support of development in the floodplain and work to minimize harm to floodplains and wetlands. State agencies reviewing federally funded projects or receiving federal grants for projects must take these Executive Orders into consideration.

Massachusetts Executive Order 149, *State Coordination and Participation with the Federal Administration under the National Flood Insurance Act*, designates the Massachusetts Water Resources Commission as the state agency to implement floodplain management programs in Massachusetts. Executive Order 181, *Barrier Beaches*, prohibits permitting development in velocity zones of primary dunes, as well as permitting of coastal engineering structures within barrier beaches. It also constrains the use of state funds and federal grants for construction projects that could encourage growth and development in barrier beach areas. Enacted in 1996, the Massachusetts Rivers Protection Act amends the Wetland Protection Act (MGL Chapter 131 Section 40) to provide protection to rivers and implements hazard mitigation by regulating activities within a 200-foot wide resource area called the Riverfront Area.

Massachusetts Building Code Update Initiatives

The State Board of Building Regulations and Standards administers the State Building Code, which incorporates FEMA's National Flood Insurance Construction Program Standards. As of the most recent edition of the State Building Code, these standards may be found in 780 CMR 3107.0, Flood Resistant Construction.

As of 2012, Massachusetts was ranked fourth among the 18 states most vulnerable to catastrophic hurricanes along the Atlantic Coast and Gulf of Mexico by the Insurance Institute for Business and Home Safety with respect to implementation and enforcement of the 2009 International Residential Code regulations and processes governing residential building construction. The Commonwealth requires mandatory enforcement and does not allow local amendments to the residential code. In addition, the Commonwealth adopts a plumbing and electrical code. The Commonwealth also has a program in place for code official certification that includes taking code classes prior to examination and certification, requires continuing education, and allows consumers to file complaints against inspectors. Massachusetts also requires licensing of general, plumbing, electrical, and roofing contractors, requires licensing candidates to pass an exam prior to licensing, and requires continuing education.

Landslide Mitigation Planning Initiative

Landslides are common in the Commonwealth, but limited data exist to support mitigation strategies or to use in developing building codes that reduce impact from landslide events. As a result of previously successful partnerships, the Commonwealth's geologist from the University of Massachusetts (a SHMIC member) applied for and received HMGP grant funding to develop landslide information to be used in future state and local hazard mitigation plan updates. This will enhance risk assessments to more accurately portray areas of impact and historical impact data.

Recovery Planning Initiative

MEMA staff attends semi-annual Recovery and Mitigation meetings to discuss important aspect of the programs, changes in priorities, and lessons learned for disaster events. In addition, Mitigation staff provides support to the Recovery Unit during immediate post-disaster operations, such as attending applicants' briefings for Public Assistance and other administrative duties.

MEMA's fiscal department ensures that all disaster and non-disaster FEMA funding is obligated and spent in accordance with all state and local regulations. Having a singular contracting and fiscal approval process ensures proper fiscal management. With recent reorganization at MEMA, the Disaster Recovery Manager now also oversees the Mitigation Unit, providing a seamless coordination with the implementation of FEMA PA, IA, and Mitigation programs. The Commonwealth's Comprehensive

Emergency Management Plan will be revised to include a revised recovery annex that better aligns with the National Disaster Recovery Framework.

17.6 FUNDING SOURCES

The Commonwealth uses a variety of programs and funds to achieve its mitigation goals. This includes special appropriations from Congress and the State Legislature, as well as funds from local sources.

The availability of federal funding sources depends upon Congress' ongoing budget appropriations process. In 2003, the federal government established two comprehensive websites that track available funding from all the federal agencies: www.fedgrants.gov and www.grants.gov. It is also helpful to check current federal appropriations from Congress through the Federal Registers at thomas.loc.gov. Many other opportunities for mitigation funding exist both in the public and private sectors, such as foundations and philanthropic organizations. Section 2 describes other funding sources.

17.6.1 Grant Support

As funding opportunities become available and are made known to the mitigation planning unit, they are forwarded to all applicable state and local mitigation counterparts. The Commonwealth makes full use of FEMA mitigation grant funding and encourages local communities to do the same. FEMA mitigation grants are used to leverage state, local, and other funds for maximum mitigation activity. For recent funding use, see Section 3. The SHMT and SHMIC meet regularly to review potential project applications, track progress, and prioritize efforts.

During the 2010-2013 update, MEMA and DCR have been successful in providing technical assistance to all interested parties statewide through workshops, one-on-one training, site visits, and policy/programmatic assistance, as detailed in Section 3. The 2013 update streamlines information about available funding programs by combining most program information in one table. All available funding sources were reviewed and updated as necessary. Project prioritization information is given in the Commonwealth's Administrative Plan contained in Annex 2.

17.6.2 Project Prioritization

The Commonwealth has had a FEMA-approved Hazard Mitigation Grant Program administrative plan since 1986, most recently updated in 2012, which details the process for prioritizing local assistance through post-disaster mitigation funding of local mitigation projects. Massachusetts has also used similar criteria to prioritize local pre-disaster mitigation grants applications. The Administrative Plan in Annex 2 includes the criteria for determining eligible projects for pre-disaster and post-disaster hazard mitigation funding in Massachusetts.

MEMA and DCR recommend only technically feasible and cost effective sub-applications to FEMA and provide pass-through funding for approved project grants to eligible sub-applicants. MEMA and DCR are also responsible for ensuring that projects funded by SRL were completed and that all performance and financial reporting requirements were met. The SRL program complements the intent of the FMA and RFC programs to reduce or eliminate future claims through the NFIP program.

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.4(c)(3)(i, iii & iv), and §201.5(b)(3) which state the following:

Requirement §201.4(c)(3)(iv): *[The State mitigation strategy shall include an] identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.*

Requirement §201.4(c)(4)(iii): *[The State mitigation strategy shall include] criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures.*

Requirement §201.5(b)(3): *[The Plan must demonstrate] that the State effectively uses existing mitigation programs to achieve its mitigation goals.*

17.6.3 Effective Use of Available Mitigation Funding

The Commonwealth of Massachusetts effectively uses mitigation programs to achieve its mitigation goals. Among the primary mitigation programs of the Commonwealth are the federally funded, state-administered hazard mitigation programs (HMGP, PDM, and FMA), and various state funding opportunities. Each of these programs has established its own mitigation goals and strategies.

17.6.4 Summary of Federal Funding Sources

Mitigation opportunities are pursued year-round in the Commonwealth. FEMA administers the NFIP, the Community Rating System, the Flood Mitigation Assistance Program, the Hazard Mitigation Grant Program, Severe Repetitive Loss, and the Pre-Disaster Mitigation Program. All of these programs are coordinated by DCR and MEMA. While various opportunities exist to fund projects, both the state and local applicants rely heavily on the use of these federal funds to implement mitigation projects.

Immediately following presidential disaster declarations, FEMA's Response and Recovery Division works closely with state agencies, especially MEMA, in assisting in short-term and long-term recovery efforts. FEMA assists disaster-affected communities through emergency funding programs, such as Public Assistance. In coordination with its Mitigation Division, Response and Recovery distributes information on hazard mitigation methods, acquisition/relocation initiatives, and coordinating HMGP grants for mitigation projects to protect eligible damaged public and private nonprofit facilities through the Public Assistance program. In addition to these programs, FEMA provides disaster recovery and hazard mitigation training at its Emergency Management Institute in Maryland. For the latest information on this and other mitigation funding programs, go to FEMA's website at www.fema.gov.

Table 17-7 summarizes the primary sources of federal funding for hazard mitigation in Massachusetts. This list is not all-inclusive. New funding mechanisms are regularly created, while others are discontinued. Funding sources to use will depend on specific project needs, but creative solutions in this time of economic difficulties should always be sought. Through continuous creativity and research, opportunities for mitigation funds in Massachusetts will continue.

TABLE 17-7. SUMMARY OF POTENTIAL FUNDING SOURCES				
Program	Type of Assistance	Availability	Managing Agency	Funding Source
National Flood Insurance Program	Pre-disaster insurance	Any time (pre & post disaster)	DCR Flood Hazard Management Program	Property Owner, FEMA
Community Assistance Program	State funds to provide assistance to communities in complying with NFIP requirements	Annually	DCR	FEMA/NFIP
Community Rating System (Part of the NFIP)	Flood insurance discounts	Any time (pre & post disaster)	DCR Flood Hazard Management Program	Property Owner
Flood Mitigation Assistance Program	Cost share grants for pre-disaster planning & projects	Annual pre-disaster grant program	MEMA	75% FEMA/ 25% non-federal
Hazard Mitigation Grant Program	Post-disaster cost-share Grants	Post disaster program	MEMA	75% FEMA/ 25% non-federal

**TABLE 17-7.
SUMMARY OF POTENTIAL FUNDING SOURCES**

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Pre-Disaster Mitigation Program	National, competitive grant program for projects & planning	Annual, pre-disaster mitigation program	MEMA	75% FEMA/ 25% non-federal
Severe Repetitive Loss	For SRL structures insured under the NFIP.	Annual	MEMA	Authorized up to \$40 million for each fiscal year 2005 through 2009
Small Business Administration Mitigation Loans	Pre- and post- disaster loans to qualified applicants	Ongoing	MEMA	Small Business Administration
Public Assistance	Post-disaster aid to state and local governments	Post Disaster	MEMA	FEMA/ plus a non-federal share
Dam Safety Program	Provides funding to state to promote dam safety through emergency action plans and exercises	Annual	DCR	FEMA
Homeland Security Grants	Multiple grant sources provide funding for homeland security activities, including THIRA development, planning, and training at the state and local levels	Annual	MEMA	DOJ, DHS, FEMA
National Fire Plan	Provides pre-disaster funds for wildfire mitigation and planning for all-hazards.	Annual	DCR	U.S. Land Management Agencies
Clean Water Act Section 319 Grants	Provides grants for wide variety of activities related to non-point source pollution runoff mitigation	Annual	MassDEP	EPA
Economic Development Administration Grants and Investment	Provides grants for community construction projects, including mitigation activities	Annual	Massachusetts Office of Business Development	U.S. Department of Commerce, Economic Development Administration
Emergency Watershed Protection	Provides funding and technical assistance for emergency measures, e.g., floodplain easements in impaired watersheds	Annual	DCR	USDA NRCS

**TABLE 17-7.
SUMMARY OF POTENTIAL FUNDING SOURCES**

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Forest Land Enhancement Program	Provides educational, technical, and financial assistance to help landowners implement sustainable forest management objectives.	Annual	DCR	U.S. Forest Service
Housing and Urban Development	Provides various grant programs related to safe-housing initiatives	Annual	Department of Housing and Community Development	U.S. Dept. of Housing and Urban Development
Reclamation and Development Grants Program	Provides funding for water-related projects, studies, etc.	Annual	MassDEP and others	EPA
National Wildlife Wetland Refuge System	Provides funding for acquisition of lands into federal wildlife refuge system	Annual	U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Service
North American Wetland Conservation Fund	Provides funding for wetland conservation projects	Annual	U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Service
Rural Development Grants	Provides grants and loans for infrastructure and public safety development and enhancement in rural areas	Annual	Department of Housing and Community Development	USDA, Rural Development
Rural Fire Assistance Grants	Funds fire mitigation activities in rural communities	Annual	DCR	National Interagency Fire Center
Chapter 90 Program	Maintaining, repairing, improving and constructing town and county ways and bridges which qualify under the State Aid Highway Guidelines	Annual	Mass DOT	State Transportation Bond
2013 MassWorks Infrastructure Program	Targeted investments in infrastructure such as roadways, streetscapes, water, and sewer	Annual	Executive Office of Housing and Economic Development (EOHED),	State Appropriation - Section 11 of Chapter 238 of the Acts of 2012
Accelerated Bridge Program	Bridge Rehabilitation, Replacement, Preservation, Maintenance, painting and cleaning projects	Rolling basis (bridges are pre-selected)	MassDOT and DCR	State Appropriation - Chapter 233 of the Acts of 2008

**TABLE 17-7.
SUMMARY OF POTENTIAL FUNDING SOURCES**

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Dam, Levee and Coastal Infrastructure Repair and Removal Program	Grants and loans for the repair and removal of dams, levees, seawalls, and other forms of inland and coastal flood control.	Annual	Executive Office of Energy and Environmental Affairs (EEA)	State Revolving Loan
Conservation Partnership	To assist not-for-profit corporations in acquiring land and interests in lands suitable for conservation or recreation.	Annual	Executive Office of Energy and Environmental Affairs (EEA)	Executive Office of Energy and Environmental Affairs (EEA)
PARC - Parkland Acquisitions and Renovations for Communities	Provides grant assistance to cities and towns to acquire parkland, develop new parks, or renovate existing outdoor public recreation facilities (formerly the Urban Self-Help Program).	Annual	Executive Office of Energy and Environmental Affairs (EEA)	State Appropriations

Other sources:

- Grants.gov, a source for federal government grants
- Grants.com, a source for private funding opportunities
- epa.gov/ogd/grants/funding_opportunities, U.S. Environmental Protection Agency
- corporateservices.noaa.gov/grantsonline, National Oceanic and Atmospheric Administration

Additional Projects of Interest:

Below is a summary of Massworks natural hazard mitigation projects funded in 2012:

- Buckland, Clesson Brook Road Project – \$971,053 will repair a portion of Clesson Brook Road in need of immediate attention as a result of damages caused by Tropical Storm Irene. The MassWorks Award will complement approximately \$4.1 million in federal funding for repairs in the project area.
- East Brookfield, Route 9 Embankment and Lake Lashaway Dam Rehabilitation – \$594,400 will fund necessary repairs to the Lashaway Dam. The dam, now at risk of failing, supports Route 9, which carries an average of 17,500 vehicles per day. The award will complement over \$800,000 in repairs made by MassDOT to the dam’s bridge.
- Paxton, Davis Hill Road Culvert – \$200,000 will replace an existing deteriorated wood, short-span bridge with a precast concrete culvert within the right of way on Davis
- Hill Road in Paxton. These improvements will increase public safety for Paxton’s residents, neighboring communities and allow trucks to utilize the roadway.
- The City of Winthrop was awarded \$500,000 under the MassWorks Infrastructure Program in the Fall of 2011. Construction began in June for the Ingleside Park Revitalization. The project will improve the park and provide necessary upgrades to the existing storm water system to decrease flooding in the park and nearby streets

Flood Mitigation Assistance Program

The Flood Mitigation Assistance (FMA) program was created as part of the National Flood Insurance Reform Act of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the NFIP. FEMA provides FMA funds to help states and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. The program is available to all communities having FEMA-approved hazard mitigation plans

by the application deadline and at the time of obligation of grant funds. The program is funded through the National Flood Insurance fund. Three types of FMA grants are available:

- Planning grants to prepare flood mitigation plans.
- Project grants to implement measures to reduce flood losses, such as elevation, acquisition or relocation of NFIP-insured structures. States are encouraged to prioritize FMA funds for applications that include repetitive loss properties, including structures with two or more losses each with a claim of at least \$1,000 within any 10-year period since 1978. Only NFIP-participating communities with approved flood mitigation plans can apply for FMA Project grants
- Management cost grants for the Commonwealth to help administer the FMA program and activities. Up to 10 percent of project grants may be awarded to states for management cost grants.

Increased cost shares may be available under the FMA program based on the completion of a repetitive loss strategy.

17.6.5 State Funding Sources

Matching FEMA Assistance

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

WHY THIS SECTION?

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

Requirement §201.5(b)(4)(iii):*[The Plan must demonstrate] that the State is committed to a comprehensive state mitigation program, which might include: The State provides a portion of the non-Federal match for HMGP and/or mitigation projects.*

Special Appropriations Following State Disasters

Although there is no separate state disaster relief fund in Massachusetts, the state legislature may enact special appropriations for communities sustaining damage following a natural disaster that is not large enough for a federal disaster declaration.

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.

State Land Acquisition & Conservation Program

This annual program through the Massachusetts Executive Office of Energy and Environmental Affairs purchases private property for open space, wetland protection, and floodplain preservation. In 1998, the Commonwealth set a goal of protecting 200,000 acres of open space in the Commonwealth by 2010. In August 2001, less than three years later, the Commonwealth announced that the Commonwealth and its land protection partners had reached the halfway mark in achieving that goal: 100,000 acres. Updated information may be found on line at <http://www.mass.gov/envir/openspace/default.htm>.

Major Flood Control Projects

The Commonwealth provides half of the non-federal share of the costs of major flood control projects developed in conjunction with the U.S. Army Corps of Engineers. This program is managed by DCR.

Flood Control Dams

The U.S. Natural Resource Conservation Service (NRCS) manages the Flood Control Dams Program, (Public Law 566), which funds operation and maintenance of 25 flood control dams on state property. This program also includes technical assistance and other smaller services from the NRCS and partners.

Flood Hazard Management Program Staff Funding

The Commonwealth provides the 25-percent non-federal share for FEMA's funding under the Community Assistance Program State Support Services Element. Funding from this program and the state match support the Flood Hazard Management Program within the DCR. The program works with FEMA to coordinate the NFIP throughout Massachusetts, providing technical assistance to participating communities, professionals, and individuals.

Weatherization Assistance Program

The Weatherization Assistance Program is funded each year by the U.S. Department of Energy, with supplemental funding from the U.S. Department of Health and Human Services and the 2009 American Recovery and Reinvestment Act. The extent of services to be provided depends on available funding. The program is intended to help low-income homeowners and renters lower their energy cost and reduce the potential impact from severe weather events. Weatherization service agencies throughout Massachusetts run the Weatherization Assistance Program.

17.7 LOSS AVOIDANCE METHODOLOGY

With public spending being closely scrutinized and governments becoming increasingly transparent in order to maintain public trust, it is important to determine whether public funds are expended efficiently and cost-effectively. Demonstration of a high return on investment on government activities helps to instill trust in citizens. In the eyes of citizens, an investment is viewed as sound if it can provide a positive return within a reasonable period of time.

With the potential for increased funding as a result of gaining enhanced status, the Commonwealth of Massachusetts must demonstrate its ability to continue to efficiently and effectively use the funds it will receive. Such determination will also help aid decision-making to appropriately allocate resources into the future, as similar projects can be compared for effectiveness.

Mitigation provides numerous benefits to the citizens of Massachusetts. Mitigation projects increase communities' resilience to disasters and can add jobs to the local economy (see the Economy portion of Section 4). As the Multi-Hazard Mitigation Council studies (2005) demonstrated, every dollar spent on mitigation provides \$4 in savings.

There is no simpler way to express the benefits of mitigation efforts than to show losses avoided that would have occurred without the mitigation effort. A loss avoidance assessment is a way to quantify the value of mitigation. Most commonly, a loss avoidance assessment is performed after a disaster and assesses how much money was saved due to mitigation. The customary approach is to re-create a similar incident to determine a "before and after" snapshot of the project. When no comparative disasters have occurred since project completion, the ability to complete studies of this nature may be limited.

While different approaches to various types of projects/hazards will be necessary, it is the Commonwealth's intent that loss avoidance assessments be integrated into the regular mitigation planning or grant management cycle to the extent possible. The Commonwealth has developed a comprehensive database to track and monitor all open and completed hazard mitigation projects and planning efforts

WHY THIS SECTION?

This section of the State Hazard Mitigation Plan meets the requirements of 44 CFR §201.5(b)(2)(iv), which states the following:

Document the system and strategy by which the State will conduct an assessment of the completed mitigation actions and include a record of the effectiveness (actual cost avoidance) of each mitigation action.

funded under the HMGP, FMA, HUD, and PDM programs. This tool has allowed the Commonwealth to track and monitor project and plan timelines and completion dates. Data will be captured in the grants management database that will support future efforts of completing loss avoidance assessments. The primary tool for completing such studies will be FEMA's Benefit-Cost Analysis or a similar tool. MEMA will review opportunities to conduct loss avoidance assessments in other manners, such as through modeling (for flood, hurricane, wind, and earthquake related projects), historical loss data (including FEMA Public Assistance and Individual Assistance historical records), and other data, depending on the type of project involved.

In addition to this, the Commonwealth will investigate ways to use the SMRT Tool that was applied during development of the THIRA, further broadening the abilities of the Tool and providing valuable information for the evaluation of mitigation measures for all hazards. Currently, this tool is based on the 31 core capabilities defined in the National Preparedness Goal. With some time and technical assistance, the SHMT can add natural hazard mitigation capabilities to the tool, allowing the Commonwealth to have a standard methodology across all hazards to measure the effectiveness of prevention, preparedness, and mitigation activities. The SHMT could then enter completed actions into the tool and evaluate the effects those actions had on the risk that is presented in the THIRA. Comparing the cost of the mitigation investment to the reduced risk will allow the Commonwealth to make risk-informed decisions to support mitigation, as well as perform return-on-investment analyses and loss avoidance studies on potential investments in the context of reduced risk.

During the course of the 2013-2016 update, the Commonwealth will continue the process of capturing the data necessary for review of historical projects and select those on which a benefit-cost analysis can be completed, using information contained in project files and event data to calculate return on investment.

The Commonwealth previously worked with FEMA to evaluate avoided losses on FEMA-funded projects, such as the City of Melrose Ell Pond Flood Mitigation Project. FEMA completed a loss avoidance study of that project for MEMA in September 2010. FEMA's Hazus modeling tool and Benefit-Cost Analysis Flood Depth Damage Function demonstrated that "for the study as a whole, 246% of the project costs, for the Melrose Ell Pond Flood Reduction Project, have been recovered based on losses avoided since the project was completed in 2008" (FEMA, 2010). It is anticipated that once similar studies have been conducted, similar results will be found.

As part of the 2012 Hurricane Sandy Joint Field Office Mitigation Strategy, the SHMT worked with FEMA to conduct a loss avoidance study related to a number of elevation projects of homes that previously sustained damage as a result of a 100-year flood event. MEMA, FEMA, and DCR had completed a number of mitigation projects to elevate residential structures above the 100-year flood elevation. The SHMT provided four structures for inclusion in the loss avoidance study. Two models—the Florida Loss Avoidance Calculator and the FEMA Benefit Cost Analysis—were used to estimate losses avoided. However, a review of the storm surge and flooding in Plymouth County indicated that flooding associated with Hurricane Sandy was the equivalent of only a 10-year storm event. Following a detailed data review and flooding analysis of each structure, it was determined that the flooding due to Hurricane Sandy would not have impacted the structures prior to the mitigation projects. A report containing the data required for the loss avoidance software, as well as other information necessary to complete a detailed loss avoidance study following a significant flooding event, will be released in the near future. The loss avoidance study contains data specific to the mitigated structures and storm event, and was created to estimate the dollar value of losses avoided due to the mitigation. Once the study is completed, that document will be incorporated in future updates to the loss avoidance portion of the SHMP.