

Section 4: MITIGATION STRATEGY

2014 SHMP Update

- The goals and objectives were revised to more closely align the mitigation strategy to mitigation activities, and reflect lessons learned from three major disasters since 2011. The goals and objectives were also assessed to correlate with 56 Local Hazard Mitigation Plans (LHMPs) to ensure consistency with the State Hazard Mitigation Plan (SHMP).
- The projects from the 2011 SHMP were reviewed and updates provided, where available. Seventy three projects were removed from the activities list, as they were identified during the 2014 evaluation as: **(1)** ongoing program functions or capabilities; **(2)** completed projects; or **(3)** no longer needed/viable.
- 98 new activities were identified by participating agencies in the 2014 SHMP update process and have been added, to the 15 activities retained from 2011, for a total of 112 actions and activities.
- Two new lists were added to represent **(1)** implemented and/or completed projects, and **(2)** activities in development. (Appendix A)
- Additional information related to state and local mitigation capabilities was combined with information from the 2011 SHMP **Sections 4.2** and **4.3**.
- The list of funding sources in the 2011 SHMP was researched, expanded, and updated in **Section 4.5**.

"Roadmap" Activity¹

In addition to the long-term and ongoing multi-hazard and hazard-specific strategies identified in this section, DHSES will continue to develop this section in key areas identified and agreed upon by the State and described in **Table 4.4g** over the life cycle of the plan.

Requirement §201.4(c)(3): *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.*

Requirement §201.4(c)(3)(i): *[T]he State mitigation strategy **shall** include a description of State goals to guide the selection of activities to mitigate and reduce potential losses.*

Requirement §201.4(d): *Plan **must** be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities.*

¹ Roadmap Activities are action items to be developed further during the life-cycle of the plan, through the monitoring, evaluation and update process. The comprehensive list of action items can be found in **Sections 2** and **4**.



Requirement §201.4(c)(3)(ii): *The State mitigation strategy shall include 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 and a discussion of State funding capabilities for hazard mitigation projects.*

Requirement §201.4(c)(3)(ii): *The State mitigation strategy shall include a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.*

Requirement §201.4(c)(3)(iii): *State plans shall include 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.*

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.*

This section provides the mitigation strategy for New York State, beginning with a discussion of the vision and how it will be achieved through goals and objectives. Mitigation actions and activities that support the goals and objectives are described, analyzed, and prioritized, and a list of potential funding sources is provided. In addition, this section discusses the current mitigation capabilities of state and local agencies and organizations, demonstrating an ongoing history of mitigation in New York State.

- 4.1 Hazard Mitigation Goals
 - 4.1.1 Revision Process for 2014 Goals
 - 4.1.2 Goals and Objectives
- 4.2 State Capability Assessment
- 4.3 Local Capability Assessment
- 4.4 Mitigation Actions and Activities
- 4.5 Funding Sources

Operationally, **mitigation** is defined as “any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects. This definition distinguishes actions that have a long-term impact from those that are more closely associated with immediate preparedness, response, and recovery activities. Maintenance operations are also distinguished from mitigation because they maintain structures without an increase in the level of protection.”²

² Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, FEMA, January 2008 (Revised).



The goals presented in this plan are framed around five broad mitigation categories, which also serve as the foundation for defining the objectives and mitigation actions and activities:

- **Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

These definitions provide the framework for the State's mitigation strategy.

Vision Statement

The first Vision Statement developed for the State's Hazard Mitigation program was created during a planning summit held in 1995:

"A society whose daily activities reflect a commitment shared by government, business, and the public to reduce or eliminate impacts from natural and technological disasters."



The 2002 SHMP updated the State's Hazard Mitigation Vision Statement to read:

"To create communities whose daily activities reflect a comprehensive commitment by government, business, non-profit organizations, and the public to eliminate or reduce risks and adverse impacts from natural, technological, and human-caused hazards."

The 2002 SHMP Vision Statement, which was carried through to the 2008 SHMP, was both more inclusive in scope and focused on integration of mitigation into all levels of New York communities. It also expanded the all-hazards emphasis with the inclusion of technical and human-caused hazards.

During the 2011 SHMP update, Planning Committee members reviewed the Vision Statement and concurred that it should be revised to reflect a more proactive leadership and support role on the part of New York State and its relationship to local governments and institutions.

"To demonstrate by example how hazard mitigation benefits the citizens of the State of New York and their communities by eliminating or reducing risks and adverse impacts from hazards, and to encourage and actively support the hazard mitigation activities of local governments, businesses, institutions and non-profit organizations."

During the 2014 SHMP update process, the SHMP Team, through discussion of the history of the Vision Statement, determined that the Vision Statement again needed revision to reflect the major impacts from multiple hazard events between 2011 and 2014. **The resulting modification of the vision statement, goals, objectives, and activities was based on numerous factors that have occurred since 2011 and as part of the 2014 SHMP update process, including:**

- Reassessment of hazard vulnerabilities and losses based on updated data, reports, and information
- Significant impacts from Hurricanes Irene and Sandy, Tropical Storm Lee, and repetitive flood events
- Availability of federal post-disaster funding resulting from the multiple disasters that increased mitigation opportunities
- Redefining mitigation actions to focus on mitigation activities related to prevention, property protection, public education and awareness, natural resource protection, and structural projects.
- Refocusing on natural hazards that have impacted, or have the potential to impact, New York State. Information about human-caused, technological, or biological hazards can be found in Volume 2 of the Comprehensive Emergency Management Plan (CEMP)



In addition, the Vision Statement was influenced by multiple reports, studies, and plans that have been implemented since 2011, such as:

- New York State 2100 Commission – tasked with finding ways to improve the resilience and strength of the State’s infrastructure in the face of natural disasters and other emergencies.
- New York Rising Community Reconstruction Program – established to facilitate community redevelopment planning and the resilience of communities, and provide additional rebuilding and revitalization assistance to communities severely damaged by Hurricanes Sandy and Irene and Tropical Storm Lee.

The following Vision Statement was developed for the 2014 SHMP, as a reflection on the priorities and programs discussed above:

2014 Hazard Mitigation Vision Statement

New York State will continually aim to reduce deaths, injuries, and economic losses stemming from natural hazards, and to lead by example in fostering community resilience and protecting the environment in the face of future natural events to improve the lives of the people of the State.

4.1 Hazard Mitigation Goals

With a successful hazard mitigation program, New York State can meet many of the serious and pervasive disaster-related challenges facing state and local governments, residents, businesses, and the environment. After an analysis of the hazards that impact the state, goals were created to guide the State and its communities in the development and selection of appropriate mitigation activities. Pursuing these goals will allow the State to achieve the ideal described in the State’s Hazard Mitigation Vision Statement.

4.1.1 Revision Process for 2014 Goals and Objectives

The 2011 SHMP goals and objectives were developed through analysis of the hazards that impact the state to guide the State and its agencies in the development and selection of appropriate mitigation activities. The thirteen (13) 2011 goals were defined within four categories: end users, services, administration, and legislation.

The SHMP Team utilized the same approach in assessing the 2011 goals for the 2014 plan update. Taking into consideration the catastrophic events that have occurred within the previous three years, it was determined that the 2014 goals should be redefined to align with the new direction of the State’s mitigation efforts and priorities. The redefined goals also further supported the planning hierarchy established by linking measurable and achievable activities to the guiding principles of the overarching strategy. After review of



the 2011 goals, the SHMP Team determined that the goals should be revised to align with the five mitigation categories described earlier in this section.

The resulting assessment of the 2011 goals of the New York State Hazard Mitigation Program is described in **Table 4.1a**.

Table 4.1a: Explanation of Revision and Resolution of 2011 Goals

	2011 Goals		2014 Revision/Resolution
End User	Goal 1:	Promote hazard mitigation awareness and education throughout the State.	Revised as Goal 3
(Services)	Goal 1:	Build a State and Local hazard mitigation infrastructure within the State and promote mitigation as the most effective means to reduce future disaster losses.	Revised – concept integrated into Goal 1
(Services)	Goal 2:	Implement, maintain, and update a comprehensive State Multi-Hazard Mitigation Plan.	Removed – development and maintenance of State Hazard Mitigation Plan (SHMP) is required under 44 CFR 201.4
(Services)	Goal 3:	Reduce risk to lives and property from frequent natural, technological and human caused disasters. Set priority on hazards that are repetitive and pose severe risk to life and property.	Revised – concept integrated into Goals 2 and 5 (repetitive flood loss)
(Services)	Goal 4:	Promote the implementation of flood mitigation plans and projects in flood-prone areas of the State, in accordance with the Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC) and Severe Repetitive Loss (SRL) Programs.	Revised – concept integrated into Goal 2 (repetitive flood loss)
(Services)	Goal 5:	Encourage the development and implementation of long-term, cost-effective and environmentally-sound mitigation projects at the Local level.	Revised – concept integrated into Goal 1
(Services)	Goal 6:	Promote Hazard-Resistant Construction, especially in residential buildings throughout the State.	Revised – concept integrate into Goal 5
(Services)	Goal 7:	Ensure hurricane safety for the people and infrastructure of vulnerable areas of New York State (NYS).	Removed – concept integrated into Goals 2 and 5
(Services)	Goal 8:	Ensure earthquake safety for the people, property, and infrastructure of New York State.	Removed – concept integrated into Goals 2 and 5
(Services)	Goal 9:	Reduce the risks of wildfire and utility failure resulting from damaged trees.	Removed – concept integrated into Goals 2 and 5
(Services)	Goal 10:	Reduce the length of utility “downtimes.”	Removed – concept integrated into Goal 5
(Administration)	Goal 1:	Ensure adequate administrative support to enable SOEM - [DHSES] hazard mitigation staff to meet their goals and objectives in a professional and efficient manner.	Removed – ongoing programmatic function that supports the SHMP
(Legislation)	Goal 1:	Track, and/or recommend, Federal, State and Local legislation related to hazard mitigation.	Revised – concept integrated into Goal 1



The New York State 2100 Commission, created in the immediate aftermath of Hurricane Sandy, was tasked with finding ways to improve the resilience and strength of the State's infrastructure in the face of natural disasters and other emergencies. **The Commission's report framed the State's recovery process, identifying and recommending nine crosscutting major actions to address multiple vulnerabilities and priorities in the State of New York:**

- a. Protect, Upgrade, and Strengthen Existing Systems
- b. Rebuild Smarter: Ensure Replacement with Better Options and Alternatives
- c. Create Shared Equipment and Resource Reserves
- d. Encourage the Use of Green and Natural Infrastructure
- e. Promote Integrated Planning and Develop Criteria for Integrated Decision-making for Capital Investments
- f. Enhance Institutional Coordination
- g. Improve Data, Mapping, Visualization, and Communication Systems
- h. Create New Incentive Programs to Encourage Resilient Behaviors and Reduce Vulnerabilities
- i. Expand Education, Job Training, and Workforce Development Opportunities

In addition to this renewed focus on strengthening resiliency to disasters, within the past two years the State has also implemented more buyout projects than ever before to eliminate repetitive loss and severe repetitive loss properties from future flood events.

Collectively, these actions represent the foundation for the sort of broad-based changes that are essential to building the long-term resiliency of the State and its citizens. **This focus on reducing vulnerability and promoting resiliency as an approach to mitigation led to the determination by the SHMP Team that the five primary themes described previously in this plan embodied the 2014 State mitigation goals:**

- Prevention
- Property Protection
- Public Education and Awareness
- Natural Resource Protection
- Structural Projects

4.1.2 Goals and Objectives

Utilizing the themes described above, goal statements were developed, and objectives were then defined and used as the tool to identify activities that support the overall strategy.

Goal 1: Promote a comprehensive state hazard mitigation policy framework for effective mitigation programs that includes coordination between federal, state, and local organizations for planning and programs.



Objective 1.1: Promote integrated land use planning to encourage resilient and sustainable efforts throughout statewide programs that address zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.

Objective 1.2: Continue to participate in state and local programs and efforts that focus on practices that support or enhance resiliency.

Objective 1.3: Improve hazard data through studies, research, and mapping to enhance information related to the impacts of hazards and related risks, vulnerability, and losses.

Goal 2: Protect property including public, historic, private structures, and critical facilities and infrastructure.

Objective 2.1: Encourage homeowners, renters, and businesses to insure property for all hazards, including flood coverage under the National Flood Insurance Program (NFIP).

Objective 2.2: Identify mitigation opportunities to protect, upgrade and strengthen existing structures from all-hazards through acquisition, elevation, relocation, and retrofit.

Objective 2.3: Encourage resilient and sustainable structures to reduce vulnerabilities, encouraging the use of green and natural infrastructure.

Objective 2.4: Promote the continued use of natural systems and features, open space preservation, and land use development planning with local jurisdictions.

Objective 2.5: Acquire, retrofit, or relocate repetitive loss properties from flood-prone areas in the state.

Goal 3: Increase awareness and promote relationships with stakeholders, citizens, elected officials, and property owners to develop opportunities for mitigation of natural hazards.

Objective 3.1: Offer trainings about hazard awareness, mitigation planning and grants, and how to incorporate mitigation into ongoing program functions.

Objective 3.2: Reduce the impact of hazards on vulnerable populations through education and awareness programs.

Objective 3.3: Improve systems that provide warning, awareness, and emergency communication.



Objective 3.4: Conduct education and awareness programs for flood mitigation planning and funding assistance.

Goal 4: **Encourage the development and implementation of long-term, cost-effective, and resilient mitigation projects to preserve or restore the functions of natural systems.**

Objective 4.1: Encourage the use of green and natural infrastructure.

Objective 4.2: Provide technical assistance to communities and stakeholders in the application and implementation of mitigation projects that preserve or restore natural systems.

Objective 4.3: Maintain and encourage ongoing relationships between state agencies and partners to play an active and vital role in preservation and restoration of vulnerable natural systems.

Goal 5: **Build stronger by promoting mitigation actions that emphasize sustainable construction and design measures to reduce or eliminate the impacts of natural hazards.**

Objective 5.1: Encourage building and rebuilding practices that address resiliency through higher standards and sustainable design to resist impacts of natural hazards.

Objective 5.2: Enhance coordination with state and local agencies that promote resiliency and sustainability.

Objective 5.3: Identify sustainable flood and erosion control projects and activities that demonstrate resiliency practices.

Objective 5.4: Provide assistance in the implementation of flood mitigation plans and projects in flood-prone areas, in accordance with federal and state regulatory, funding, and technical assistance programs.

Pursuing these goals and objectives will allow the State to achieve the ideal described in the State's Hazard Mitigation Vision Statement.



4.2 State Capability Assessment

*Requirement §201.4(c)(3)(ii): The State mitigation strategy **shall** include 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 and a discussion of State funding capabilities for hazard mitigation projects.*

New York State has a broad capacity to manage mitigation options and capabilities in both the pre- and post-disaster phases of any incident. State agencies and organizations manage, coordinate, and develop various policies, programs, initiatives and projects that support mitigation.

The preferred methodology for implementing mitigation is to initiate actions before a disaster impacts New York, and this pre-disaster approach is the cornerstone of the State's mitigation strategy, planning, and project activities. As stated in **Section 1**, the New York State (NYS) Consolidated Laws, Executive Law, Article 2-B establishes the framework for the State's management of all disaster-related activities, empowering the Disaster Preparedness Commission (DPC) with the authority to act on behalf of the State in pre- and post-disaster matters including, but not limited to, planning activities. However, it should be emphasized that the concept of Local Home Rule determines and sets limits on the authorities any State agency may have within the boundaries of a local jurisdiction.

In addition to applicable laws and regulations referenced in **Section 1**, state agencies give special consideration to the outcomes of disaster prevention and mitigation activities, which may be included in or result from any and all actions of the agency. Attention to disaster prevention and mitigation activities is a highly desirable goal for all State agencies, which should include such considerations in their actions whenever they are feasible and compatible with program purposes and goals. Actions that would potentially have a negative impact on the prevention or mitigation of disasters should be avoided or modified to preclude a negative impact. Agency actions may be conducted by direction of law, rule, or agency discretion; as part of agency budgets; or as normal functions of the individual agency's programs or projects. Agencies are committed to lessening the impacts from disasters in the state through the activities identified and described in this section.

Additions to agency activity listings occur as the relationship of various State programs to disaster prevention/mitigation is fully realized, as programs develop, and, especially, as programs are added or amended as the result of increased State interest in comprehensive emergency management and mitigation as a life-saving and cost-saving philosophy.



Program and Development Trends in Response to Hurricane Irene, Tropical Storm Lee and Hurricane Sandy

Since FEMA's approval of the 2011 SHMP, and as a result of the disasters that New York State endured in 2011 and 2012, the State's focus for redevelopment and future development has demonstrated the shift through ongoing programs and new initiatives that have set a precedence of resiliency in the recovery phase.

Recovery programs initiated by the State in response to the multiple major disasters have focused on mitigation through the theme of "resiliency." New York State agencies and authorities, including but not limited to the Department of State (DOS), Department of Environmental Conservation (DEC), Department of Health (DOH), Department of Transportation (DOT), DHSES, New York State Energy Research and Development Authority (NYSERDA), and the New York State Canal Corporation collaborate through formal and informal processes to achieve recovery and mitigation goals and activities for the State as well as local communities. This is accomplished through numerous initiatives and programs such as FEMA's Public Assistance Program, coastal management, building codes, and flood control that present opportunities to rebuild to higher levels of protection from natural hazards.

Programs and initiatives identified throughout the 2014 SHMP planning process that support a renewed focus on mitigation and resiliency for the State's future include efforts such as the following:

New York State 2100 Commission³

The Commission reviewed the vulnerabilities faced by the State's infrastructure systems and developed specific recommendations that can be implemented to increase New York's resilience in five main areas: transportation, energy, land use, insurance, and infrastructure finance. These recommendations are intended to:

- Identify immediate actions that should be taken to mitigate or strengthen existing infrastructure systems – some of which suffered damage in the recent storms – to improve normal functioning and to withstand extreme weather more effectively in the future.
- Identify infrastructure projects that would, if realized over a longer term, help to bring not only greater climate resilience but also other significant economic and quality of life benefits to New York State's communities.
- Assess long-term options for the use of "hard" barriers and natural systems to protect coastal communities.
- Create opportunities to integrate resilience planning, protection, and development approaches into New York's economic development decisions and strategies.

³ In 2012 Governor Cuomo formed the NYS 2100 Commission that is tasked with identifying ways to improve the resilience and strength of the state's infrastructure in the face of natural disasters and other emergencies.



- Shape reforms in the areas of investment, insurance, and risk management related to natural disasters and other emergencies.

Coastal Management

According to *Article 34, Environmental Conservation Law, Coastal Erosion Hazard Areas 6 NYCRR Part 505, Coastal Erosion Management Regulations*, specific activities related to development in a coastal area require a permit to minimize damage to property, natural protective features, and other natural resources; prevent the exacerbation of erosion hazards; and protect human life.

Water Resource Law

In 2011, Governor Cuomo signed legislation to further protect New York's waters by requiring a DEC permit for water withdrawal systems having the capacity to withdraw 100,000 gallons per day or more of surface water or groundwater. This law requires statewide registration of existing agricultural withdrawals that are greater than 100,000 gallons per day (30-day average) and major basin water diversions of greater than 1,000,000 gallons per day. The law became effective on April 1, 2013.

Silver Jackets Program

The Silver Jackets Program is a federally-led interagency team that continuously works together to reduce flood risk at the state level. The goal of the program is to reduce flood risk, provide agencies with a better understanding of and ability to leverage each other's programs, develop collaboration between various agencies, better coordinate programs, and produce cohesive solutions, as well as to be a multi-agency technical resource for state and local agencies, and provide a venue for establishing relationships to facilitate and integrate solutions post-disaster.

New York Rising

This program is the Governor's initiative to address economic development, education, public health, public safety, infrastructure, resiliency, and housing. As a result of responding to multiple crises, the program was developed to focus on strengthening systems through protecting and hardening infrastructure. The initiative addresses critical systems and assistance to property owners and critical infrastructure through programs that cover issues such as resiliency of healthcare facilities; home buyout programs; strengthening coastal protection; protecting transportation systems against future storms; hardening fuel delivery systems; hardening utilities; strengthening wastewater systems; and protecting vulnerable populations.



New York State Resiliency Institute for Storms & Emergencies (NY RISE)

The New York State Resiliency Institute for Storms & Emergencies (NY RISE) is an “applied think tank” led by New York University and Stony Brook University. NY RISE serves as a hub of research and education on emergency preparedness, as well as a clearinghouse of information regarding extreme weather and natural disasters. The Resiliency Institute serves as a statewide anchor for policymakers and emergency responders, providing comprehensive analysis to inform critical decisions before, during, and after extreme weather events.

New York Works Statewide Capital Plan

The New York Works Task Force created a 10-year plan for the State’s capital spending. The plan presents a flexible tool for the Governor and the Legislature to make forward-looking decisions for the economic future of New York State. As an enterprise, New York State holds a strong competitive position in the global economy, and is dependent on its population, environment, and businesses to sustain this position. The Works plan was built on a seven-step approach that encompasses areas of State capabilities in mitigation planning and resilient construction, by conducting a statewide infrastructure assessment and identifying projects with the goal of ensuring that future State spending will “reduce the total cost of ownership over the life of the asset, produce positive spillover benefits, improve environmental and financial sustainability, and maximize return on investments.”

State inter-agency adaptation working group (ad hoc)

This working group began in 2007 as a group of five agencies designated and tasked by the State Legislature as the Sea Level Rise Task Force with the purpose of identifying and “assessing the anticipated impacts of sea level rise, as well as providing recommendations related to actions the State may take to protect areas at risk of damage, adaptive measures and regulatory and/or statutory changes.” The process was facilitated by DEC with the participation of the Department of State’s Division of Coastal Resources, DHSES, NYSERDA, DOH, DOT, and others. The group’s report was submitted to the Legislature on December 31, 2010; however, in the process of accomplishing its assigned task, the group recognized the value of continuing to meet to routinely exchange information related to common issues and to coordinate projects with a multi-agency focus. Attendance has steadily increased since its inception to as many as 12 agencies in regular attendance. Although the impetus for meeting was for the discussion of issues related to the State’s adaptation to climate change concerns, resulting discussion has extended beyond climate change and into areas of sustainability, resiliency, and all-hazard mitigation.



Mighty Waters Working Group

Other statewide initiatives such as the multi-agency Mighty Waters Working Group created in June 2012 by the NYS Department of Environmental Conservation and NYS Department of State (DOS) bring together stakeholders ranging from businesses and economic development councils, local governments, academic institutions, federal agencies, civic leaders and non-governmental organizations to focus on efforts to improve environmental sustainability and flood hazard risk reduction. The working group also helps position the region to receive and strategically deploy federal resources that may become available.

Pre-Disaster Capabilities

New York State's capabilities related to mitigation extend into the following categories:

Compliance/Enforcement Programs

Regulations and enforcement programs can assist in preventing or mitigating hazards that threaten the health and safety of the public, property, and the environment. Numerous State agencies manage regulatory programs such as building and fire codes; construction and maintenance of infrastructure (bridges, roads, and dams); regulation of development in hazard-prone areas (floodplain management); and other types of functions. State regulatory oversight and enforcement is a key element in preventing and mitigating disasters.

Education/Public Awareness

State agencies provide information related to hazards, threats, risks, and vulnerabilities to the public, which allows them to take appropriate and timely actions to reduce the effects of disasters. Examples include the use of warning systems, web pages, Facebook, Twitter, and YouTube to provide awareness and emergency information. Lessons learned from previous disasters and incidents have shown that a well-informed public plays a significant role in the development and implementation of disaster prevention/mitigation goals and activities. Ongoing awareness programs and activities can result in private individuals, organizations, agencies, and others taking actions that reduce their impact from disasters.

Zoning/Land Use Programs

Based on historical records of previous disasters in New York State, it is apparent that hazard impacts often occur repetitively in the same locations. Therefore, appropriate land use management is a means to avoiding or reducing the impacts of disasters. Because New York is a home rule state and the regulation of land development has been delegated to local governments, the SHMP and other mitigation efforts encourage and guide rather than require municipalities to use appropriate land use regulatory authority to support mitigation efforts.



Monitor Potential Disasters

State agencies have the responsibility to monitor potential disaster conditions, to identify specific sites, and to anticipate situations that could develop into a disaster. A reporting and warning system, utilizing field staff, relays the information through State agency liaisons to DHSES, which then notifies the chair of the DPC. In times of increased threat, this reporting/warning system is expanded in order to provide the DPC with the best available information. Systems for monitoring potential disasters can also provide significant data and information related to changing levels of risk and vulnerability for specific hazards. An example of this is a long-term water level monitoring station in a river estuary that looks at water levels and tide stages and tracks long-term sea level rise in order to define changes over time.

Plans/Planning

The planning process and the dissemination and implementation of plans allow all stakeholders to participate in consensus-building processes based upon a shared level of knowledge and understanding, thus increasing the potential for success. In addition to State agencies preparing plans for response and mitigation covering their own activities, their plans can support and encourage the development of local plans.

Prevention/Mitigation Projects

State agency programs and projects may be implemented at the State level or serve to influence local government activities. In addition, State agency programs and projects can also have a direct impact on local mitigation programs and projects by providing funding, technical assistance, or other types of support. Mitigation projects fall within the following five categories: prevention; property protection; public education and awareness; natural resource protection and structural projects. An example of a structural project is construction of a flood control system to protect critical infrastructure.

Technical Assistance

Many state agencies have specialized capabilities (e.g., engineering, scientific), which can be utilized for guidance and support to communities faced with disasters. Due to the cost of these services and capabilities, local governments may not be able to acquire them without assistance, which the State may be able to provide to help prevent/mitigate the impact of disasters.



Training

Disaster plans require trained personnel to implement associated activities and tasks. In relation to mitigation, State agencies can provide training for emergency workers, public officials, employees, and local jurisdictions specific to measures, techniques, and activities that reduce or eliminate loss from hazards.

Risk/Vulnerability Assessment

The 2014 SHMP update describes enhanced hazard management capabilities that were not in place in 2011. The State now funds multi-jurisdictional planning grants only on the county level. This focus has allowed the DHSES Mitigation Section to develop a systematic approach to local plan review that allows for more statewide continuity with mitigation planning. In addition, the recent emphasis on mitigation planning as a result of multiple storms has empowered jurisdictions in the State with the knowledge and ability to take actions to avoid or reduce the impact of hazards in their community. Given the upsurge of plans and projects in recent years, it is apparent that a significant enhancement in NYS has been the focus on pre-disaster mitigation activities as a means of reducing future losses.

Another development in the hazard management capabilities of NYS has been the development and implementation of NY Alert, a system with the capability to inform or forewarn citizens of a pending event, whether in small localized areas or statewide. The capabilities of this system are profound in terms of the potential to save lives and protect property. This system is described further in the Mitigation Actions and Activities list contained in **Section 4.4**.

A State program capability that has been significantly enhanced since the 2011 plan is in the area of the repetitive loss and severe repetitive loss programs. Although these programs have recently been combined under the Flood Insurance Reform Act of 2012 (Biggert Waters), a robust property buyout program has developed over the past few years as a result of the State's focus on this as a priority initiative, and the availability of increased post-disaster mitigation funding to support it. This program will continue to be a priority for the State and as such will enable many more jurisdictions and citizens to initiate actions to mitigate against the risk of flood damage.

Data and information related to past disasters, including impacts to people, property, environment, and the economy, help stakeholders to evaluate and anticipate vulnerabilities and the potential frequency of future events. Some state agencies have a formalized program of reporting information relating to specific types of disasters. This information is gathered during the mitigation planning cycle and is used to determine or reassess the threat or likelihood of impacts from future disasters, especially in relation to estimating the potential losses.

An evaluation of the State's capabilities in a pre-disaster operational phase reveals that the responsibility of pre-disaster actions rests with DHSES and the DPC agencies. Through a coordinated level of preparedness, the DPC assures that resources and manpower are



available to assist jurisdictions and/or State facilities that may experience impacts from a disaster. Each agency is required to have in place a Continuity of Operations Plan (COOP) for each facility to assure that essential services and functions can continue if conditions restrict full operation of the agency's functions. Several levels of contingency plans are in place for State agencies, and each agency is required to designate a manager to maintain the necessary planning and exercises to ensure that essential functions of the agency and facility can continue.

In order to determine potential losses from natural hazards, DHSES conducts damage loss estimation for NYS government critical facilities by coordinating with State agencies post-disaster to collect and analyze the scope of impact and estimated dollar value of damages. Data collected by this means can be integrated with the New York State Office of General Services (OGS) fixed asset database, and serves as a basis for development of cost-effective activities. Information related to impacts and damages from the recent storms was gathered from State agencies during the 2014 SHMP update.

In addition, the State addresses and explores loss reduction options for identified repetitive loss properties by assisting communities to identify repetitive loss locations and support the search for potential funding to mitigate future losses. DHSES continues to promote hardening of existing and future critical facilities in local communities and to educate local planning staff through the "comprehensive" (master plan) technical assistance program of the DOS.

State capabilities may be diminished if a local jurisdiction is unable or hesitant to fully engage in pre-disaster planning activities. In this situation, State agencies may not be able to go beyond programmatic limitations to engage the jurisdiction in efforts that have mutual benefits; however, efforts in mitigation education conducted across the State have had a positive impact on the number of jurisdictions that participate in pre-disaster mitigation opportunities.

At the time the 2011 SHMP update was prepared, it was noted that the State had been challenged in carrying out pre-disaster mitigation efforts to enhance the goals and objectives presented in this section of the SHMP due to a shortage in staff and related resources. Recognizing this, the State has taken steps since 2011 to secure an acceptable level of staffing that is expected to be sustained throughout the life cycle of the 2014 SHMP update.

Post-Disaster Capabilities

Similar to FEMA's Emergency Support Function (ESF) #14 - Long-Term Community Recovery, New York State's Article 2-B provides a considerable and flexible framework for the activities of State agencies during and after a disaster. Specifically, Article 2-B of the New York State Executive Law, §28-a, *Post disaster recovery planning*, defines the requirements for the development and implementation of local recovery and redevelopment plans whenever a State disaster emergency has been declared. Per the statute:



“A local recovery and redevelopment plan shall include, but need not be limited to: plans for replacement, reconstruction, removal or relocation of damaged or destroyed facilities; proposed new or amended regulations such as zoning, subdivision, building, or sanitary ordinances and codes; and plans for economic recovery and community development. Such plans shall take into account and to the extent practicable incorporate relevant existing plans and policies, and such plans shall take into account the need to minimize the potential impact of any future disasters on the community.”

The section further defines requirements for public input to the recovery plan via public hearings, the submittal of the plan to the State DPC, the ability of the DPC to assist the municipality in preparing its recovery plan, and the provisions for adoption and revision of the recovery plan, as necessary.

In addition, the full resources of the State are brought to bear in the State Emergency Operations Center (SEOC), where all DPC agencies, FEMA, the American Red Cross, and Salvation Army, and other entities are on call to assist with the more immediate needs of local jurisdictions that do not have the resources to respond to the impacts and consequences of the hazard.

The resources of the DHSES Recovery Section are essential components of the post-disaster activities required to mitigate any further impact of a hazard. The Recovery Section works closely with the Mitigation Section to ensure that all appropriate measures are followed in order to assist in the restoration of jurisdictions to their pre-disaster condition. However, there are opportunities post-disaster when additional work can be initiated to increase a project’s resiliency to hazards, as long as the benefit-cost ratios justify the project, so that reconstruction projects can exceed pre-disaster conditions, increasing resilience against future events.

The Mitigation Section has developed a comprehensive set of policies and procedures that enable an efficient process from application through project completion for jurisdictions undertaking mitigation projects. The vast majority of funding flows from FEMA to the State, which is obligated to ensure that the funds are appropriately used and accounted for in the funding process. Several levels of accountability have been instituted in order to guarantee that this obligation is met.

The 2014 SHMP includes several on-going hazard management capabilities that were not documented in the 2011 or 2008 plans. The Mitigation Section continues to work with FEMA to promote the development of all-hazard mitigation plans, which will enable jurisdictions in the State to take actions to avoid or reduce the impact of hazards. The upsurge of plans and projects that the Mitigation Section now receives is a positive indicator in the development of a progressive attitude that demonstrates the intent to integrate mitigation in local emergency management programs. For example, as of the



2011 SHMP, between 100 and 120 Letters of Intent (LOIs) had been received for the previous grant cycle announcement, compared to the most recent grant cycle in August 2013 when more than 2,000 LOIs were received, totaling requests for more than \$11 billion dollars.

The Governor continuously supports local planning in communities that have been significantly impacted by disasters. In April 2013, Governor Cuomo announced the Community Reconstruction Zones program, now called Community Reconstruction Program (CRP), funded by State and federal government initiatives. The CRP is a community-driven approach to empowering local initiatives, officials, and residents affected by Hurricane Sandy, Hurricane Irene, or Tropical Storm Lee to develop comprehensive local rebuilding and recovery plans. Many CRP communities will be eligible for grants ranging from \$3 million to \$25 million, if approved. An example of communities that have accepted this challenge for support for local planning initiatives is Prattsville (Greene County). Volunteers with the Town of Prattsville have secured \$2.3 million in grant funding to reestablish homeowners, reopen businesses, and foster economic growth. (Additional information for Prattsville may be found online at www.prattsville.org.) With over a 102 CRP communities statewide, what started as a response-and-recovery effort following Sandy, Irene and Lee has become a standard procedure for identifying pre-disaster capabilities.

Table 4.2b provides a summary of additional State capabilities that are implemented through various programs and initiatives, some of which may be time-limited programs and others ongoing programmatic functions. In addition, these programs may provide opportunities to develop and implement separate mitigation activities that support the program or initiative. Programs noted with a 2011 identifier were included as activities in the 2011 SHMP, but are more appropriately included on this list because they describe a program or initiative that has become an on-going programmatic function. In some cases, projects, such as NY Alert are also included on the Mitigation Actions and Activities list because there are opportunities for mitigation projects that support program capabilities.

Although the State's mitigation capabilities have demonstrated improvement over the past few planning cycles, the overwhelming numbers of major disasters that have occurred in the past few years have caused some impact to mitigation capabilities. Conversely, the repetitive disasters have resulted in an increase in post-disaster mitigation opportunities and funding. This relationship is discussed further in **Section 5.1.4**.



Table 4.2b: State Capabilities Programs and Initiatives

Name	Description	Agency	Category	Identifier
Statewide Mitigation Collaboration (2011-MH 1)	Multi-level mitigation coordination and training; mitigation education to property owners, builders, and environmental groups	All State Agencies, Local/Regional Planning Agencies, Local Emergency Management, and Elected Leadership	Plans/Planning	2011-MH1
Mitigation and Hazard Awareness Public Education Program	Awareness initiative and information to the public and partner agencies via print media, website, information dissemination, schools, and curriculum development	DHSES & Appropriate State and Local Agencies, including Education Department, American Red Cross	Education/Public Awareness	2011-MH5,6 & 7
Mitigation Planning and Project Resources to Local Government	Technical assistance and training for mitigation including grant application and administration, plan development, and project identification.	DHSES, County Mitigation Coordinators	Plans/Planning	2011-MH10
NOAA Weather Radio (NWR) Alert Receivers	Promotes awareness and use of NOAA Weather Alert receivers and warning program to all citizens, government agencies, and emergency managers.	NWS, DHSES, All State Agencies	Education/Public Awareness	2011-MH12



Name	Description	Agency	Category	Identifier
<p>NY Alert System <i>(This capability is also included as a mitigation action in this section to support public education and warning activities)</i></p>	<p>Encourage utilization of NY-Alert statewide: NY-Alert currently has 6.3 million subscribers. Of these, 2.79 million subscribers can receive reverse 911 notifications because their counties have incorporated their 911 databases into the NY-Alert system. Since NY-Alert’s inception, reverse 911 notifications have been activated approximately 10,000 times for weather-related events, as well as one potential dam breach. Approximately 95% of NYAlert’s notices are prompted by natural events.</p> <ul style="list-style-type: none"> • During the 15-day window combining the State’s response to Irene and Lee, NYAlert issued 72,000 faxes, 2.1 million phone calls, 25 million text messages, and 135 million e-mail warnings. • This occurred in 68 discrete activations initiated by local government EMS agencies, 45 of which were direct life safety alerts (reverse 911) either warning residents to evacuate or dispatching help for water or air rescues. These were updated 700 times during the course of these events (e.g., to add information on evacuation routes or shelter locations). At one time there were 45 simultaneous activations in Broome, Orange, and Rockland counties. 	<p>DHSES (Lead), All State and Local Agencies</p>	<p>Education/Public Awareness</p>	<p>2011-MH-13</p>
<p>Emergency Alert System (EAS) Radio and TV Broadcast</p>	<p>Public warning supported by initiative to provide a direct link from DHSES to all NYS Broadcasters</p>	<p>DHSES</p>	<p>Education/Public Awareness</p>	<p>2011-MH14</p>
<p>Building Codes</p>	<p>Promotes building techniques to resist natural hazards. Programs about construction methods to reduce the risk of natural hazard damage such as wind, flood, and seismic. Promoted via distribution/availability of "Protecting Home and Family Project" or other information brochures at conferences, training, and state & local agency web pages.</p>	<p>Lead: DOS ; Support: DHSES, DEC, FEMA</p>	<p>Education/Public Awareness</p>	<p>2011-MH20</p>



Name	Description	Agency	Category	Identifier
Local Waterfront Revitalization Program (LWRP): Promote land-use practices that reduce risk from natural hazards	Develop a natural hazard database system to assist state and local officials with risk assessment, mitigation, and other planning initiatives. Heighten awareness of natural hazard exposure by developing a comprehensive database. DOS requires that all LWRPs include a section for inventory, assessment, and planning to manage coastal areas. Technical assistance provided to local governments concerning proposed storm damage reduction projects. Local ordinances addressing coastal hazard risks are a routine requirement of LWRP communities. Enhanced State freeboard provision under New York State Codes, Rules and Regulations, Part 502, Floodplain Management are incorporated into agreements with the Division for funding from Environmental Protection Grants.	DOS, DEC	Compliance/ Enforcement Programs & Education/Public Awareness	2011-MH22, 29
Coastal Erosion Hazard Areas (CEHA)	Program to increase participation level of communities that incorporate hazard mitigation into local development ordinances. Promote through educational and awareness media the loss reduction benefits including hazard mitigation activity in local development regulations. The Division of Coastal Resources provides guidance and technical assistance to municipalities considering adoption of local laws implementing Coastal Erosion Hazard Areas Act.	DEC	Compliance/ Enforcement Programs & Education/Public Awareness	2011-MH23
Disaster Preparedness Commission (DPC)	NYS Disaster Preparedness Commission (DPC) guides and advances statewide hazard mitigation initiatives. The DPC is the Governor's policy oversight group for the State's emergency management program. Encourages state agencies to incorporate mitigation activities in day-to-day operations.	All State Agencies designated as DPC member agencies	Program Management and Evaluation	2011.MH-25



Name	Description	Agency	Category	Identifier
New York State Building Code	Enhanced State freeboard provision under New York State Codes, Rules and Regulations, Part 502, Floodplain Management. For example, when an existing structure is elevated, the Building Code requires Based Flood Elevation (BFE) plus two feet.	Educational Services Unit of the Division of Code Enforcement	Compliance/ Enforcement Programs	2011-MH30
Code Enforcement Disaster Assistance Response (CEDAR) Program	Ongoing program implemented by DOS to provide 6-hour CEDAR course for code officials	DOS, DEC	Compliance/ Enforcement Programs, Training	2011-MH31
NYS Highway Infrastructure	DOT routinely incorporates hazard mitigation activities, such as seismic design regulations for bridges into its engineering and operations management activities	DOT, NYSTA, NYS Bridge Authority, MTA	Compliance/ Enforcement Programs	2011-MH36
NYS Bridge Flood Watch Program	Ensures operability of State highway infrastructure by monitoring pre-identified scour-susceptible bridges when NWS issues a flood warning	DOT, NYSTA	Monitor Potential Disasters	2011-F1
Floodplain Management and Mitigation Program Administration	Implementation of floodplain mitigation planning and projects for feasibility and cost effectiveness, including coordination with local jurisdictions to develop and implement comprehensive mitigation programs. Program is ongoing since 2008, with more than 1,232 buyouts since 2006.	DEC, NFIP Participating Communities	Prevention/ Mitigation Projects	2011-F2,4
Forest Fire Safety Awareness and Public Education Program	Ongoing program that addresses wildfire prevention and risks associated with wildfires. Public Service Announcements, "Smokey the Bear," "FIREWISE," Wildfire Survival Program, pamphlets, and information dissemination.	DEC	Education/Public Awareness	2011-WF1
Coastal Zone Management	Implementation of CEHA, Coastal Management, and LWRP programs to preserve natural protective features and protect property from flood and erosion hazards.	DEC, DOS	Compliance/ Enforcement Programs	2011-F3



Name	Description	Agency	Category	Identifier
Dam Safety Program	Administration of Dam Safety Program: safety inspection of dams; technical review of inserted dam construction or modification; monitoring of remedial work for compliance with dam safety criteria; and emergency preparedness	DEC	Compliance/ Enforcement Programs	2011-F6
National Flood Insurance Program (NFIP) and Community Rating System (CRS)	Participation in the NFIP program including the Community Rating System and insuring structures located in floodplains and flood-prone areas. Continue promoting NFIP to increase number of NFIP insured structures in the floodplain to protect property owners from financial losses. Encourage communities to participate in voluntary CRS program to reduce property owners flood insurance premiums.	DEC, DHSES, DOS	Prevention/ Mitigation Projects	2011-F5
NFIP Repetitive Loss / Severe Repetitive Loss Program	Promote education and awareness of the public and local officials related to loss reduction for repetitive flood claims under the NFIP. Encourage outreach and education for property owners about mitigation options and funding potential.	FEMA, DEC, DHSES, DOS	Education/Public Awareness, Prevention/ Mitigation Projects	2011-F15
FEMA Flood Mapping / Risk Mapping	Ongoing flood map modernization program including the “state mapping advisory committee” to assist in recommendations on priorities, reviewing map product utility and improvements, and identifying cooperating agencies (e.g., USACE, NRCS, etc.). Ensures mapping is updated periodically to provide the best available technology and maximize usefulness in identifying high-hazard areas and vulnerable populations and properties. Map modernization was completed in four counties between 2011 and 2014.	DEC, DHSES, FEMA	Plans/Planning, Technical Assistance, Risk/Vulnerability Assessment	2011-F17
Stream Maintenance Program	State agencies provide technical assistance and training programs for local governments, increasing visibility and accessibility, and promoting the benefits of the stream maintenance program	DEC, USACE, DOS, SWCD, DHSES	Technical Assistance, Training	2011-F7



Name	Description	Agency	Category	Identifier
DOT "Snow School"	Ongoing program to train DOT employees, local municipalities, and contractors in policies and procedures related to the removal of snow and ice on the state's highways.	DOT	Training	2011-WS4
Seismic Design Specifications for New Bridges	New bridges designed with minimal average return of 1000 years to seismic design specifications. Designs compensate for foundation soils and structure support due to seismic vibrations. Bridge rehabilitation projects also include seismic evaluation of existing structures and undertaking of corrective actions.	DOT	Compliance/ Enforcement Program	2011-E2
Storm water Management Program	Ongoing program to enhance promotion and awareness of storm water management regulations, including improving availability of model storm water regulations, training of code enforcement officials, awareness of planning/zoning, and integration into comprehensive land use planning training by DOS.	DEC, DOS	Compliance/ Enforcement Program, Technical Assistance	2011-F9



4.3 Local Capability Assessment

Requirement §201.4(c)(3)(ii): *The State mitigation strategy shall include a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.*

The DHSES Mitigation Section has been actively working with local governments in the development of LHMPs and guiding them toward identifying measures effective for mitigation purposes. Because New York State is a home rule state, the primary impetus for mitigation activities must come from the local level.

The increasing number of LHMPs approved since 2011 demonstrates that local governments acknowledge the benefits of developing and adopting LHMPs. Through a variety of outreach methods, DHSES has been actively encouraging local governments to incorporate mitigation considerations into their daily activities. Since the 2011 SHMP, the Mitigation Section has worked with FEMA Region II in the development of *Hazard Mitigation Planning Standards*, discussed in **Section 5**, and included in **Appendix 5** that serves as a valuable resource for local hazard mitigation planners. The 2011 SHMP discussed budget constraints at all levels of government, which slowed local mitigation planning efforts, with some communities expressing frustration with their inability to devote staff to developing plans. There has been a significant turn-around in this occurrence since the 2011 SHMP. Following Hurricane Irene and Tropical Storm Lee, 18 planning grants were awarded totaling more than \$9 million dollars.

Likewise, the 2011 SHMP discussed an ongoing effort for appropriate hazard mitigation planning standards and a more refined, strategy-focused process with FEMA and the National Emergency Management Association (NEMA) in 2010-2011; and New York is one of four states tapped to participate on the project team. Due to the number and severity of the declared disasters since the 2011 SHMP, the DHSES Mitigation Section has not yet been able to participate in these efforts, though it intends to do so in the future.

Support and coordination with FEMA in relation to mitigation policies, planning, and funding has increased since 2011, and through continuing FEMA programs remains high. **New York State has received seven Presidential disaster declarations since 2011, making more than \$890.8 million available in Hazard Mitigation Grant Program (HMGP) planning and project grants:**

- FEMA-1957-DR-NY – Severe Winter Storm and Snowstorms (Declared February 18, 2011) - \$7,050,735 (6 month)
- FEMA-1993-DR-NY – Severe Storms, Flooding, Tornadoes, and Straight-line Winds (Declared June 10, 2011) \$5,264,029 (6 month)
- FEMA-4020-DR-NY – Hurricane Irene (Declared August 31, 2011) \$89,157,146 (12 month)



- FEMA-4031-DR-NY – Remnants of Tropical Storm Lee (Declared September 13, 2011) \$39,347,912 (12 month)
- FEMA-4085-DR-NY – Hurricane Sandy (Declared October 30, 2012) \$750,000,000
- FEMA-4111-DR-NY – Severe Winter Storms (Declared April 23, 2013) funding amount not yet available
- FEMA-4129-DR-NY – Severe Storms and Flooding (Declared July 12, 2013) funding not yet available

New York State jurisdictions have also taken full advantage of all of FEMA's Hazard Mitigation Assistance (HMA) grant programs since 2011. In addition to the HMGP, these include the Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA) programs. **DHSES's requested totals for planning and project grants are primarily in the PDM program, as noted below:**

- 2011 – \$422,358.75 (actual funding approved)
- 2012 – \$970,810.00 (actual funding approved)
- 2013 – In process

With the hiring of additional staff, and with substantial assistance from FEMA, the DHSES Mitigation Section has already demonstrated a more active role that it intends to continue in future years in working with local governments in the development of LHMPs and providing guidance in identifying effective mitigation measures.

By working with local jurisdictions throughout the planning process, the Mitigation Section has encouraged local governments to review policies currently in place to determine their effectiveness for hazard mitigation. The concepts, goals and actions developed in LHMPs can and should be integrated and merged with existing planning and regulatory mechanisms, and have been assimilated into the 2014 SHMP goals for a comprehensive statewide approach to achieving goals, as identified in **Section 5.2.2, Table 5f**. The DHSES Mitigation Section actively encourages the use of building codes, zoning ordinances, land use plans (current and potential future land use), revitalization plans, economic development plans, subdivision regulations, and capital improvement plans to promote the consideration of mitigation priorities at all stages of the local planning process. The DHSES Mitigation staff provides technical assistance for incorporating these and other planning priorities. The effectiveness of each of these planning tools, including the adoption of a hazard mitigation plan, is determined by each jurisdiction's resolve to support and enforce the specific terms of related plans or codes. Communities where growth and development are increasing must take particular care in all decisions that might authorize development in hazard-prone districts, areas that rely on open space, or environmentally-sensitive lands.

While improvement has been noted in terms of the local capability to prevent or reduce the impacts of hazards, much progress is still possible regarding the full integration and merging of mitigation goals and objectives into county and municipal planning and code enforcement regulations, policies, and procedures. **Table 4.3c** provides examples of mitigation planning tools that can assist local government planners.



Table 4.3c: Mitigation Implementation Tools for Local Governments

Policy	Description	Applicability	Effectiveness
Building Codes	The State has adopted the IBC building code and local governments adopt and enforce this code.	The adoption and enforcement of building codes relates the design and construction of structures to standards established for withstanding a variety of forces.	All structures built after 2002 must comply with the IBC code, which includes special provisions for building in the floodplain, including NYS higher freeboard standards, of 2 feet above base flood elevation.
Zoning	Laws and ordinances regulate development by dividing the community into zones and by setting development criteria for each zone. Zoning decisions are delegated to local governments in New York State.	Zoning can keep inappropriate development out of hazard-prone areas and can designate certain areas for such things as conservation, public use, or agriculture.	Communities in NYS can designate areas in their community as “open space,” thereby reducing the effect of flooding on the community.
Land Use Planning	Comprehensive land use planning provides a mechanism to prevent development in hazardous areas and allow development in a manner that minimizes damage from hazards.	Local governments can use land use planning to identify those areas subject to damage from hazards and work to keep inappropriate development out of these areas. Land use planning can also be used for a more regional approach when local governments work together.	Communities can incorporate a mitigation review into the land use planning process, thereby potentially minimizing development in identified hazard areas.
Subdivision Regulations	Sets construction and location standards for subdivision layout and infrastructure.	Contains standards for such things as storm water management, erosion control, and subdivision size.	Urban flooding is often a result of building residential or commercial developments without consideration for storm water drainage issues. These regulations have the potential to reduce the impact of urban flooding on a community.



Policy	Description	Applicability	Effectiveness
<p>Capital Improvements Planning</p>	<p>Identifies where major public expenditures will be made over the next five to ten years.</p>	<p>Capital Improvement Plans can secure hazard-prone areas for low-risk uses; identify roads or utilities that need strengthening, replacement, or realignment; and can prescribe standards for the design and construction of new facilities.</p>	<p>May reduce the amount of public dollars spent on construction in hazard-prone areas.</p>



As part of LHMP development, local communities identify programs and policies within their communities that contribute to mitigation activities. Additionally, local communities identify methods to incorporate the LHMP into routine activities, thereby ensuring the LHMP remains viable, and goals and objectives are achieved.

The Mitigation Section offers a variety of training courses to assist local officials in expanding their capabilities by facilitating learning and enhancing disaster preparedness. The DHSES Training Section offers courses developed by FEMA's Emergency Management Institute (EMI), as well as those created by the Mitigation Section and DPC agency partners in response to the specific needs identified by emergency management professionals in New York State. The Planning, Recovery, and Mitigation Sections all augment the Training Section's efforts by providing training opportunities for local officials endeavoring to expand their knowledge of mitigation and planning.

Due to New York State's large size; the great number of municipalities contained within it; and its diverse physical, demographic, political, and socio-economic characteristics, it is challenging to develop a list of prioritized projects that are applicable to the entire State. Moreover, and consistent with the State's home-rule philosophy, the responsibility to implement appropriate mitigation measures generally rests with the local jurisdiction where the action is needed. However, the State has developed a recommended list of project types and non-structural mitigation measures based upon the hazards to which it is vulnerable. In that sense, this section of the SHMP serves as a valuable tool for local governments and state agencies considering alternative mitigation measures to reduce or eliminate specific risks to infrastructure and facilities.

Jurisdictions across the state are encouraged to look closely at the relatively low-cost actions that can be implemented to initiate a sound mitigation program in a relatively short time period. The recommended project types, sorted by hazards with the highest potential for impacting the state are included in **Table 4.3d**. For example, zoning regulations, land use policies, and public awareness campaigns can all be initiated through the existing resources of most jurisdictions. While the following list can be used by local jurisdictions to develop strategies to address specific hazards that impact their area, it is not intended to be all-inclusive.



Table 4.3d: Recommended Project Types by Natural Hazards

Hazard	Project Type
Hurricane / Tropical Storm/Coastal Storm	<ul style="list-style-type: none"> • Public Awareness • Tree Pruning • Strengthen/Improve/Enforce Building Codes in Hazard Areas • Wind Resistant Design and Construction • Structural Retrofit • Evacuation Plan
Climate Change	<ul style="list-style-type: none"> • Public Awareness • Strengthen/Improve/Enforce Building Codes in Hazard Areas • Elevation • Acquisition • Protective Measures for Critical Facilities • Reduce Public Infrastructure within High-Hazard Areas • Identify Locations of Vulnerable Populations
Flooding / Dam Failure	<ul style="list-style-type: none"> • Public Awareness • Planning and Zoning • Acquisition • Relocation • Protective Measures for Critical Facilities • Storm water Management • Elevation • Wet/Dry Flood Proofing • Reduce Public Infrastructure within High-Hazard Areas • Transfer Development Rights • Property Swap Program
High Winds/Tornadoes	<ul style="list-style-type: none"> • Public Awareness • Tree Pruning • Strengthen/Improve/Enforce Building Codes in Hazard Areas • Wind Resistant Design and Construction • Structural Retrofit • Safe Room Construction
Earthquake	<ul style="list-style-type: none"> • Public Awareness • Planning and Zoning • Strengthen/Upgrade/Enforce Building Codes • Retrofit/Upgrade Critical Facilities • Seismic Retrofit
Coastal Erosion	<ul style="list-style-type: none"> • Public Awareness • Elevation • Protective Measures for Critical Facilities • Reduce Public Infrastructure within CEHA's • Acquisition of Structures (Demolish & Convert to Open



Hazard	Project Type
	Space) <ul style="list-style-type: none"> • Relocation of Structures • Bank / Dune Stabilization • Natural Protection Features
Extreme Heat/Cold	<ul style="list-style-type: none"> • Public Awareness • Identify Location of Vulnerable Populations • Establish Heating/Cooling Centers • Issue Advisories and Warnings
Drought	<ul style="list-style-type: none"> • Public Awareness • Drought Preparedness/Planning • Drought Resistant Vegetation • Increase Water Conservation Standards • Retrofit/Upgrade Irrigation System
Winter Storm/Ice Storm	<ul style="list-style-type: none"> • Public Awareness • Hazard Resistant Construction • Tree Pruning • Strengthen/Improve/Enforce Building Codes in Hazard Areas • Retrofit Critical Structures • Redundant Utilities/Communications
Wildfire	<ul style="list-style-type: none"> • Public Awareness • Planning & Zoning (i.e., urban-wildland interface set-back ordinances) • Open Space Preservation (especially along the urban-wildland interface) • Instituting periodic, proactive tree trimming and brush cutting programs to protect public infrastructure investments
Landslide / Land Subsidence	<ul style="list-style-type: none"> • Public Awareness • Planning and Zoning • Open Space Preservation • Acquisition of Structures (Demolish & Convert to Open Space) • Relocation of Structures • Bank Stabilization
Hail Storm	<ul style="list-style-type: none"> • Building Codes • Public Awareness • Weather warning system improvements and modernization



4.4: Mitigation Actions and Activities

Requirement §201.4(c)(3)(iii): State plans shall include 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.

Due to New York State's large size; the great number of local municipalities contained within it; and their diverse physical, demographic, political, and socio-economic characteristics, it is challenging to develop a list of prioritized projects that encompass the entire State. Many mitigation projects across the state are initiated and implemented at the local level, and because New York State is "home rule," the State government cannot enforce the actions local governments take or do not take in relation to mitigation actions and activities. Therefore, this section focuses on those activities for which the State has the authority to undertake and implement.

4.4.1 Identifying Mitigation Actions and Activities

The 2014 SHMP identifies mitigation measures that can be implemented at the state government level. **Section 3.0** of this plan describes the methodology used to identify the hazards that present the highest level of risk and potential losses to New York State. The outcome of the comprehensive profiling, assessment and ranking of fifteen hazards resulted in the determination that the following six hazards are considered to be of the **highest** risk to the state and will be addressed through appropriate mitigation actions and activities:⁴

1. Hurricane
2. Climate Change
3. Flood
4. High Winds
5. Earthquake
6. Coastal Erosion

Severe winter weather, extreme temperatures, and drought - ranked as low hazards based on their overall impacts - occur with some frequency, but primarily require preparedness and response actions at the local jurisdictional level to address their impacts. For this reason, mitigation measures were not developed to address these hazards in the 2014 SHMP. Two additional hazards, wildfire and landslides, do present mitigation opportunities and activities, such as the national "FIREWISE" program, and the Department

⁴ Although these hazards are ranked as high for the purpose of identifying cost-effective, technically feasible and environmentally sound mitigation activities at the state level, additional hazards may also present significant risks within local jurisdictions and should be fully assessed at the local level for vulnerabilities and potential losses.



of Transportation's road construction standards, that are currently being carried out through various State agency initiatives. For this reason, activities that support wildfire and landslide mitigation are included in **Table 4.4e**. Other hazards that were ranked as low based on frequency, probability, and/or magnitude are not addressed by mitigation actions or activities in the 2014 SHMP, but will be reevaluated for the next plan update.

The 2014 SHMP includes a full hazard profile and risk assessment for **climate change** for the first time. Significant information is provided in **Section 3.4** regarding characteristics, locations and potential impacts from climate change. Climate change includes multiple individual hazards, and while it is not required to be addressed by federal mitigation planning criteria, it has been an issue of high concern in New York State and numerous institutions are addressing adaptation measures to climate change. Analysis of the conditions brought on by climate change can provide a better understanding of how risk and vulnerability of population, property, environment, and the economy may be affected in the future. In addition, changing climatic conditions may exacerbate the impacts of other identified hazards that already affect New York State. Although increased certainty about climate change and its links to human-caused activities has emerged since the 2011 plan, the focus of this plan is the mitigation of affects caused by natural hazards.

With this understanding of climate change, and its inclusion in the 2014 SHMP as a high hazard, mitigating activities have been identified and included in this plan. In addition, activities identified and directly associated with other hazards such as flooding and coastal erosion, may also indirectly address the secondary hazards that result from climate change.

Mitigation Actions and Activities presented in this section were developed through a collaborative process with the SHMP Team, which included New York State agencies and organizations. The original list of strategic activities was an outcome of the collaborative effort from the 2002 NYS Mitigation Planning Summit and subsequent plan update cycles where the framework, guidelines, and criteria were discussed, established, and revised to ensure that appropriate mitigation measures were developed following the requirements as stated in the federal regulation. For the 2014 SHMP update, actions and activities were discussed at all meetings with stakeholders to ensure that information gathered for the plan was accurate and up-to-date. Mitigation activities cited in the 2011 SHMP were extensively reviewed, and in some cases it was deemed appropriate to combine activities with similar objectives or outcomes.

4.4.2 Evaluation of Mitigation Actions and Activities

In general, the SHMP Team recognized that despite the short timeframe for the 2014 SHMP update, the multiple major disasters in the previous three years had elevated mitigation to a higher level of importance in a number of state and local agencies and organizations. For this reason, it was important to capture as much information on 2011 projects as possible, as well as any new activities that had been developed as a result of the recent disaster experiences.



For the 2014 SHMP update, stakeholder agencies first had the opportunity to review the mitigation activities table from the 2011 plan and provide input. A submittal form (See **Appendix 4, Attachment A.**) was developed and disseminated to the mitigation stakeholder group to collect specific information related to activities that should be included in the updated plan. Input received from the agencies was used to update the current status of the 2011 activities, which were then reviewed with the SHMP Team. It was determined that some revisions were required for the 2014 update in order to narrow the focus of activities to address achievable and measurable results. In addition, a tracking matrix was initiated in the 2014 update to document progress in achieving goals and reducing losses. During the 2014 plan update meetings, stakeholder participants were prompted to share information related to changes in policies, programs, initiatives, and projects, including ongoing functions that support mitigation. Activities that had become institutionalized processes or programs within specific agencies since 2011 were removed from the activities list and documented in the new “State Capabilities” table (**Table 4b**) to demonstrate achievement in integrating specific initiatives into ongoing programmatic functions. Activities that were identified as completed or implemented since the 2011 plan were placed in a new “Mitigation Progress” table developed to document overall progress. This methodology also supports the State’s philosophy of institutionalizing hazard mitigation in current policies and programs to ensure that mitigation planning is a long-term process with a collaborative effort to support integration and implementation of mitigation into day-to-day operations of the State and local governments.

An additional table was created during the 2014 update process for the purpose of capturing activities and projects in development, with the intent of reviewing these as potential activities during each annual plan review and monitoring cycle. All activities included in this list should have the potential to be technically feasible, cost effective and environmental sound, but are not yet fully developed to be able to make this determination at the time of submission. (See “Activities in Development” table in **Appendix 4, Attachment B.**)

Evaluation of mitigation actions and activities occurs at two levels – first, when potential activities are submitted for consideration and inclusion in the mitigation plan; and, second, during the annual monitoring and evaluation process for the plan. This process, described below, was redefined and followed for the 2014 SHMP update.

When potential activities are first submitted to the DHSES Mitigation Section, the staff determines that all information necessary for evaluation and ranking has been included, and that the activity meets the definition of a mitigation activity based on the five categories for potential projects (prevention, property protection, public awareness, education, natural resources protection or structural project), which also align with the State’s mitigation goals. (The format used for project submission is provided in **Appendix 4, Attachment A.**) The process to evaluate activities during the life cycle of the plan is described in **Section 6 – Plan Maintenance.**



4.4.3 Prioritization of Mitigation Actions and Activities

The prioritization or “ranking” of the proposed actions and activities provides a guide for choosing funding projects; however, each activity has its own merit. After the action is submitted and staff determines that there is sufficient information, the project is evaluated using a modified ranking system modeled on the “STAPLEE” criteria. This acronym represents the set of evaluation criteria: S-social, T-technical, A-administrative, P-political, L-legal, E-economic, and E-environmental. Although STAPLEE is a generally accepted evaluation process that provides a systematic approach to identifying and prioritizing opportunities associated with a particular alternative, the SHMP Team modified the STAPLEE criteria to ensure that it aligned with the State’s mitigation strategy and priorities, and emphasized activities that were cost-effective, environmentally sound, and technically feasible.

Table 4.4e explains the criteria and instructions for the State’s Mitigation Actions and Activities Ranking System:

NYS HAZARD MITIGATION PLAN		
ACTIONS AND ACTIVITES RANKING SYSTEM INSTRUCTIONS		
Probability of Acceptance by Population	4	Likely to be endorsed by the entire population
	3	Of benefit only to those directly affected and would not adversely affect others
	2	Would be somewhat controversial with special interest groups or a small percentage of the population
	1	Would be strongly opposed by special interest groups or a significant percentage of the population
	0	Would be strongly opposed by nearly all of the population
Funding Availability	4	Little to no direct expenses
	3	Can be funded by operating budget
	2	Grant funding identified
	1	Grant funding needed
	0	Potential funding source unknown
Probability of Matching Funds	4	Funding match is available / or funding match not required
	-	N/A
	2	Partial Funding match available
	-	N/A



NYS HAZARD MITIGATION PLAN		
ACTIONS AND ACTIVITES RANKING SYSTEM INSTRUCTIONS		
	0	No funding match available/ or funding match unknown
Benefit Cost Review	4	Likely to meet Benefit Cost Review
	-	N/A
	2	Benefit Cost Review not required
	-	N/A
	0	Benefit Cost Review unknown
Environmental Benefit	4	Environmentally sound and relatively easy to implement
	3	Environmentally acceptable and not anticipated to be difficult to implement
	2	Environmental concerns and somewhat difficult to implement because of complex requirements
	1	Difficult to implement because of significantly complex requirements and environmental permitting
	0	Very difficult to implement due to extremely complex requirements and environmental permitting problems
Technical Feasibility	4	Proven to be technically feasible
	-	N/A
	2	Expected to be technically feasible
	-	N/A
	0	Technical feasibility unknown or additional information needed
Timeframe of Implementation	4	1 year
	3	2 years
	2	3 years
	1	4 years
	0	More than 4 years
Minimum = 0	Ranking Level:	Low: 0-10; Medium: 11-21; High: 22-32
Maximum = 32		



Each activity submitted for 2014, and 2011 activities retained on the 2014 list, were evaluated using this ranking system. **Appendix 5, Attachment C** is a table of the raw scores for all activities ranked in the 2014 update. The summary score for each activity was then included on the Mitigation Actions and Activities Table (**Table 4f**). The methodology used to rank mitigation activities as projects that are submitted for funding allows for targeting of specific priorities when funding becomes available.

In addition to the ranking system score, the following additional information was included in the activities matrix to provide a comprehensive representation of each activity:

Year/Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
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Definitions:

- **Year/Activity Number** – identifies the year the activity was submitted/added to the list.
- **Hazard** – identifies the natural hazard the activity addresses.
- **Title** – identifies the type of activity.
- **Description of Activity** – prompts consideration for evaluation, technical feasibility, cost-benefit, and environmental value. Descriptions should include the name of the program and/or activity; expected results, including reduction of potential impact from the natural hazard; detail on the specific activity/phases or elements; and implementation strategy or how the activity will be implemented to meet the desired outcome. For example, if the proposed activity is to “increase awareness,” the implementation strategy might be the use of web sites or web training, or increased collaboration among stakeholders by way of scheduled meetings and conferences.
- **Agency** – list the agency or agencies that would likely be involved in implementing the proposed activity, or would be responsible for implementation. Agencies might include federal, state and/or local agencies and organizations.
- **Estimated Cost** – prompts consideration of cost-effectiveness. Estimate the actual cost of or budget for the activity. If the actual cost cannot be determined, but it is determined that it would be marginal or significant compared with the overall agency program/activity cost, identify accordingly.



- **Funding Source** – identify all potential funding sources that support the agency programs or funding sources for the activity itself, including operating budgets, and capital improvement plans, and potential (or awarded) grants.
- **Timeframe** – identify the timeframe within which the activity will be implemented. For example, **short-term** (< 2 years) if the activity can reasonably be expected to be implemented within the next 2 years; **long-term** (> 2 years) if the activity is more complex, requires significant time, widespread support, and/or resources in order for implementation to occur; or **ongoing** if it is a current and ongoing program that incorporates periodic activities. For example, NY Alert is an ongoing warning program that requires periodic public awareness and education efforts to maintain its effectiveness in reducing impacts to the population.
- **Priority Ranking** – (**high**= 22-32 points; **medium**= 11-21 points; or **low**= 0-10 points) prompts consideration for prioritization by ranking based on the ranking system criteria described in **Table 4e**, above. The ranking score may be determined by the agency submitting the activity, by DHSES Mitigation Section staff, or by the SHMP Team during annual monitoring and review of activities.
- **Mitigation Goal** – prompts consideration of how goals (and objectives) are supported by mitigation activities. Each activity should be linked to one or more goals.
- **Current Status (by year)** – For the purpose of the plan update, this column is used to evaluate the progress made during the past planning cycle. In evaluating each item, the SHMP Team will survey all agencies to gain feedback on progress made on each specific activity. While some of the responses obtained from the agencies may be more detailed, the information will be edited to provide a concise summary of the progress. Terminology used to describe progress is: **Good**, which indicates significant progress has been made and it is anticipated that this activity will be ongoing or completed within the next planning cycle, thus requiring consistent effort and monitoring; **Fair**, which indicates moderate progress has been made, but it is clear that additional effort is needed; **Limited**, which indicates areas where there has been limited or no progress on the specific activity. All newly-submitted activities will be noted as **New**.

Table 4.4f presents the 2014 Mitigation Actions and Activities as a compilation of activities that were maintained from the 2011 plan, as well as those submitted as new activities for the 2014 update. Fifteen activities were carried over from the 2011 SHMP, and 98 new activities were added, for a total of 112 actions and activities.



Table 4.4f: 2014 Mitigation Actions and Activities

CLIMATE CHANGE MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-001	Climate Change	Building Capacity in Hudson River Communities to Create Climate- Adapted Hazard Mitigation Plans	Provide training and technical assistance to Hudson River Estuary communities and hazard mitigation consultants to update or enhance current FEMA-approved hazard mitigation plans to include climate adaptation and green infrastructure in risk assessment and mitigation strategies.	DEC	\$40,000	FMA, HMA, Staff Time	S	M	4		New project
2014-002	Climate Change	Conduct a Climate Vulnerability and Economic Assessment for At- Risk Transportation Infrastructure in the Lake Champlain Basin	Prioritize road-stream crossings (culverts) and road segments that are most vulnerable to climate change impacts, and have significant safety and ecological roles; develop engineering-based design adaptation options; incorporate the benefits and costs of adaptation options. The study is also supporting the development of the USGS StreamStats tool for NYS, which will be expanded to allow projecting trends.	DOT		FHWA	L	M	4 5		New project
2014-003	Climate Change	Conduct a risk study of the extreme weather and climate change as it relates to capital programs.	NYS is a pilot state for the transportation asset management plan (NYSDOT TAMP) and risk management process under MAP-21. The plan to be developed in the next 6 months will consider extreme weather and climate	DOT		HMGP, PDM	S	M	1		New project



CLIMATE CHANGE MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			change as a component of environmental risk. The risk management register will address trade-off analyses of risk versus impact and the next capital program update instructions are expected to reflect the results of this broader risk analysis.								
2014-004	Climate Change	Conduct a study based off of the Cornell study on intense precipitation models to determine future stream and culvert flows for new projects	Continue to look at changes in design for bridges, culverts, etc.; need to help engineers determine future stream flows to design culverts, bridges. This study will be completed at the regional level on a scale of (50 miles by 50 miles). Design standards need to accommodate flow at the end of their design life, not just the beginning.	DOT		NYSERDA funding	S	M	1 5		New project



COASTAL EROSION MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-005	Coastal Erosion	East River State Park – Shoreline Stabilization	This park is located on a former industrial site on the East River in Williamsburg, Brooklyn. The park’s shoreline is experiencing ongoing erosion. This project will stabilize the shoreline through a variety of storm resilient techniques, creating an engineered “soft” shoreline so that the public can continue to safely enjoy the waterfront.	OPRHP	\$585,000	CDBG	S	M	4 5		New project
2014-006	Coastal Erosion	Great South Bay Pool & Bath House Demolition	State Parks closed the park’s swimming pool in 2011, due to its deteriorating condition and its location, immediately adjacent to the Great South Bay where it is prone to flooding and damage during coastal storms (over the years, protective dunes and beach have eroded away). This project would demolish the closed pool and bathhouse, and replace it with new recreational facilities that are designed to be resilient to future coastal storms.	OPRHP	\$6,000,000	CDBG	S	M	2		New project



COASTAL EROSION MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-007	Coastal Erosion	Jones Beach State Park - Dune Creation Project	While most of Jones Beach State Park is buffered from coastal storms by natural dunes, there are no coastal dunes in front of the park's most developed section which includes the West Bathhouse, Central Mall, Boardwalk, and the East Bathhouse. These areas experienced significant damage during Hurricane Sandy. This project will construct a protective dune system as a natural protection measure for park facilities.	OPRHP	\$40,000,000	CDBG	S	H	4 5		New project
2014-008	Coastal Erosion	Multiple State Park Project	State Parks need to repair several bridges and large culverts on Tiroati Brook Road, Seven Lakes Drive, and Lake Welch Drive that are in poor condition and subject to undermining and other failures during large rainfall events. These structures are on roads that provide critical access routes to park facilities, as well as for the public traveling through the park. Failure of one or more structures would have significant impacts on Harriman's children's group camps and the surrounding communities.	OPRHP	\$1,500,000	CDBG	S	M	4 5		New project



COASTAL EROSION MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-009	Coastal Erosion	Orient Beach State Park – Shoreline Protection	The majority of Orient Beach State Park – Shoreline Protection the park’s entrance road has already been stabilized with a rock revetment. Approximately 1,700 linear feet of the access road still requires protection. The roadway and utility lines running along the road have experienced significant damage during a number of coastal storms, including Sandy.	OPRHP	\$3,000,000	CDBG	S	H	4 5		New project
2014-010	Coastal Erosion	Robert Moses State Park - Beach Nourishment & Dune Construction	Robert Moses State Park has suffered significant erosion from coastal storms over the past decade. Hurricane Sandy caused significant damage to the park, eroding large amounts of beachfront and dunes, collapsing a portion of the park’s traffic circle, and heavily damaging the Field 5 boardwalk and bathhouse. State Parks has completed a \$10 million “Phase 1” nourishment project to restore part of the eroded beachfront. However, the park’s roadways, buildings, and infrastructure remain highly vulnerable to future storms. A “Phase 2” beach nourishment and dune construction project is urgently needed to protect the park from future storms.	OPRHP	\$40,000,000	CDBG	S	H	4 5		New project
2014-011	Coastal Erosion	Roberto Clemente Park- Bulkhead replacement	Roberto Clemente is a 25-acre waterfront park with 3,700 linear feet of waterfront along the Harlem River in the Bronx.	OPRHP	\$35,000,000	CDBG	S	M	4 5		New project



COASTAL EROSION MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			The park, along with a very large adjacent housing complex, is protected from the Harlem River by a 2,100 linear foot steel sheet pile bulkhead that is in poor condition due to severe corrosion of the unprotected steel and loss of fill under the esplanade due to Super storm Sandy. During Sandy the park was three feet under water. This project will replace the failing bulkhead with a new, storm resilient bulkhead. The project will include creation of a 9,000 square foot tidal pool that will serve as green shoreline infrastructure and will facilitate habitat along the Harlem River. The project will also reconstruct the aging shoreline esplanade running along the top of the bulkhead, utilizing a variety of storm resiliency and storm water capture measures.								
2014-012	Coastal Erosion	Stabilize Natural Shoreline North of The Bulkhead, at Roberto Clemente Park (Ref Baird 11)	Funding is needed to stabilize 1,600 feet of stone and natural shoreline located directly north of the bulkhead at Roberto Clemente Park, to protect park facilities including baseball fields and recreational fields. This project will provide for a resilient shoreline and park facilities, including a tidal wetlands restoration project.	OPRHP	\$7,000,000	CDBG	S	M	4 5		New project
2014-013	Coastal Erosion	Bayswater Park Project	Bayswater is located on an historic estate on Jamaica Bay.	OPRHP	\$2,200,000	CDBG	S	M	4 5		New project



COASTAL EROSION MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			The park has lost most of its structured bulkhead over the years yielding a succession to salt marsh grasses. This project will enhance establishment of a natural, storm resilient shoreline through creation of tidal wetlands, dunes, and native plantings.								
2014-014	Coastal Erosion Flood Hurricane	Soil Stabilization Demonstration Projects to Reduce Erosion Risks to Railroad Structures and Infrastructure	Working in partnership with Metro- North to assess erosion of railroad tracks along the Hudson River Estuary, and protect using methods which follow the best management practices of the Hudson River Sustainable Shorelines project in order to reduce the erosion risk to railroad infrastructure. Solutions would include using a combination of native vegetation and rip-rap or other bank toe protection.	DEC		HMA & Staff Time	L	H	4 5		New project



COASTAL EROSION MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-015	Coastal Erosion Flood Hurricane	Soil Stabilization Demonstration Projects to Reduce Erosion Risks to Structures and Infrastructure	Plan and implement erosion control demonstration projects along the Hudson River Estuary to reduce risk to structures and/or infrastructure from flooding, storm surge, wind, waves, and ice using technical approaches derived from the Hudson River Sustainable Shorelines Project. Projects would include installing geotextiles and vegetative buffer strips, preserving mature vegetation, decreasing slope angles, adding wave breaks, and stabilizing with rip rap and other means of slope anchoring. These projects would be identified in partnership with local communities and agencies.	DEC	\$3,000,000	HMA & Staff Time	L	H	4 5		New project



EARTHQUAKE MITIGATION ACTION AND ACTIVITIES MATRIX											
Year	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014/ 016	Earthquake	Bridge and Tunnel Restoration	Identify and incorporate seismic requirements in bridge and tunnel restoration projects.	MTA			L	L	2 5		New project
2011/ 017	Earthquake	Seismic Study & Retrofit	NYS Bridge Authority has conducted seismic retrofit studies to its bridges. In January of 2004, seismic rehabilitation work was completed on the Kingston-Rhinecliff Bridge. Bridge rehabilitation projects also include seismic evaluation of existing structures and corrective actions commenced. The remaining bridges will be retrofitted based on studies and funding available.	NYS Bridge Authority			L	M	2 5		New project
2011/-018	Earthquake	Post-Seismic Inspection	Develop post seismic inspection guidelines for transportation infrastructure to better mitigate damages and loss during high magnitude earthquakes within NYS	DOT			S	M	1 2		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-019	Flood	Assessing Flooding Risks and Mitigation Options from a Watershed Perspective	This project would study key rivers and streams from a watershed perspective, and determine 1. Flooding risks and 2. Potential mitigation options. This assessment will go beyond municipal boundaries to examine entire watershed(s). The study would use watershed delineation, GIS mapping data, and hydraulic modeling to determine what mitigation methods would be most appropriate for local implementation and what would be most effective at reducing flooding impacts.	DEC			S	M	1 4		New project
2014-020	Flood	Amsterdam Flood Control Project	Amsterdam Flood Control Project repair damage to right bank flood wall on South Chuctanumda Creek, repair washed out riprap (500 feet), replace missing sections of bank in separate locations on the South Chuctanmunda, repair bank erosion along the Mohawk river floodwall.	DEC			S	M	5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-021	Flood	Binghamton Flood Control Project	Binghamton Flood Control Project. Repair of severe shoaling in the Pine Creek at several locations, bank erosion along Pierce Creek at several locations, significant scour along foundation of floodwall at Park Creek, large amount of sediment in Park Creek pressure conduit, overtopping at several locations including at tie in to high ground.	DEC			S	M	5		New project
2014-022	Flood	Binghamton South Flood Control Project	Binghamton South Flood Control Project. Binghamton South Severe shoaling in Pierce Creek; bank erosion along Pierce Creek; Scour along foundation of flood wall along Conklin Ave; Significant scouring and void along flood wall Park Creek; Large amount of sediment in Park Creek pressure conduit; Overtopping at several locations including at the tie in to high ground. Northeast Binghamton: Voids adjacent to floodwall, joint leakage between wall sections upstream of RxR bridge, brick pavers broken along the wall where lamp post are present, piping from building draining at landside of base of wall; Large voids and course at base of flood walls; Erosion along wing wall and levee just upstream of the Court Street closure; Erosion along levee toed and Chamberlain Creek left bank; Chamberlin Creek culvert	DEC			S	M	5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			significantly jammed with debris, sloughing riverside slope.								
2014-023	Flood	Green Infrastructure to Reduce Localized Flooding	Green infrastructure practices can reduce storm water runoff through infiltration. By strategically implementing appropriate green infrastructure practices, especially as retrofits, localized flooding problems can be reduced. Implementation can be site-specific or within a particular sub watershed to improve storm water management during storms. While many potential sites have already been identified, a component of this project could be a plan to identify the most strategic locations to specifically reduce flooding problems.	DEC			S	M	4 5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2011-024	Flood	Identify and Evaluate Loss Reduction Options for Repetitive Loss Properties	Address and explore loss reduction options for defined repetitive loss properties. Assist communities to identify repetitive loss locations and support search for potential funding to mitigate future loss.	DEC		Operating budget for daily support State/Federal mitigation programs and HMA	L	H	1 2 5	On-going program efforts with continued progress.	During the 2013 Unified HMA process the state only supported the acquisition of SRL properties. A special emphasis was placed on Benefit Cost Analysis for each property.
2014-025	Flood	Northeast Binghamton Flood Control Project	Northeast Binghamton severe shoaling in Pierce Creek; bank erosion along Pierce Creek; Scour along foundation of flood wall along Conklin Ave.; Significant scouring and void along flood wall Park Creek; large amount of sediment in Park Creek pressure conduit; Overtopping at several location including at the tie in to high ground.	DEC			S	M	5		New project
2014-026	Flood	Northeast Binghamton Floodwall Project	Northeast Binghamton: Voids adjacent to floodwall; joint leakage between wall sections upstream of RxR bridge; brick pavers broken along the wall where lamp post are present; piping from building draining at land side of base of wall; Large voids and course at base of flood walls; erosion along wing wall and levee just upstream of the Court Street closure; erosion along levee toed and Chamberlin Creek left bank; Chamberlin Creek culvert significantly jammed with debris; sloughing riverside slope.	DEC	\$420,000		S	M	5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-027	Flood	Real-Time Gages for Early Detection of Flooding Risk	While the USGS stream gage system provides invaluable information, there are many additional rivers and streams that are not currently being monitored. These streams may respond to precipitation differently, and at different times, based on their individual watersheds. Precipitation may also be quite localized, which could increase flooding risk for a particular location. This project would strategically install rain gages to capture information on precipitation duration/intensity and stream gages to capture information on height or discharge and provide an early warning for flooding risk. This network would supplement the existing USGS system for more localized data.	DEC			S	M	1 3		New project
2014-028	Flood	Targeted Dam Removal Hudson Estuary Watershed	Dam infrastructure is aging, while precipitation is predicted to become more intense. These two factors increase the future risk of catastrophic, and unplanned, dam failures. Dams can also create upstream flooding around the impoundment. A regional program that identifies the highest risk dams to downstream flooding as well as those contributing to upstream flooding, will be identified, and dam removal will be pursued	DEC			L	M	4 5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			with willing dam owners to permanently eliminate dam related flood risks.								
2014-029	Flood	Adjust Insurance Rates	Coordinate with State Floodplain Managers to work with FEMA to adjust insurance rates for those homes who elevate utilities above BFE.	DEC			L	L	1 2		New project
2014-030	Flood	Elevate Utilities Above BFE	Approximate 80% of housing was built pre-FIRM. These structures have basements that are vulnerable to flooding. Most utilities are located in the basement. This action will provide grant funds to homeowners to elevate the utilities above BFE.	DEC			L	L	2		New project
2014-031	Flood	Continue and Enhance Promoting the NFIP Community Rating System (CRS)	Continue and enhance promoting the NFIP Community Rating System (CRS). Improve awareness by ensuring comprehensive integration into State agency technical assistance & training program curriculum for local governments and increasing visibility and accessibility of data via the NYS (DHSES/DEC/DOS) web site. For instance; DOS technical planning assistance for LWRP and Comprehensive planning.	DEC		Operating budget Federal Grants	S	H	1 2		New project
2014-032	Flood	Shandaken flood control project	Repair to the armored bank at the Shandaken flood control project not covered under PL-84-99. Shoal and tree debris removal is required.	DEC	\$80,000		S	M	4 5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-033	Flood	Hudson River National Estuarine Research Reserve Project	This area of the park, located directly on the Hudson River, includes the Hudson River National Estuarine Research Reserve environmental center and offices, a public marina, parking area, roadway, restrooms, and a picnic area. This project will implement a number of storm-proofing and resiliency measures to make the area less vulnerable to flooding and damage during storm surges on the Hudson.	OPRHP	\$4,000,000	CDBG	S	H	5		New project
2014-034	Flood	Lake Kanawauke and Lake Sebago Project	The stream corridor that connects Lake Kanawauke and Lake Sebago was heavily damaged by flooding during Tropical Storm Irene. The stream passes through several culverts and pipes that do not have sufficient capacity for major flood events. This project will remedy the capacity problems and restore the stream to natural conditions, removing a potential impoundment hazard that is vulnerable to failure and poses a significant additional risk to the Lake Sebago dam and downstream communities.	OPRHP	\$2,000,000	CDBG	S	H	4 5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-035	Flood	Dinsmore Golf Course Flood Project	Mills-Norrie is adjacent to the hamlet of Staatsburg in Dutchess County. Staatsburg has experienced severe flooding during various storm events in recent years. The Dinsmore Golf Course, located with the State Park, presents an opportunity to attenuate some of the flooding issues that have caused property damage to numerous homes and businesses in low-lying areas. This project will construct storm water capture features, permeable surfaces, and management practices in the golf course to reduce downstream storm water volumes and reduce flood impacts in the nearby community.	OPRHP	\$6,000,000	CDBG	L	M	4 5		New project
2014-036	Flood	Hither Hills Campground	The 168-site Hither Hills campground is extremely popular, with virtually 100% occupancy during the summer season. During coastal storm and heavy rain events, sections of the campground routinely flood damaging park facilities. A project to raise the elevation of portions of the campground and improve drainage structures is needed to alleviate this problem.	OPRHP	\$2,000,000	CDBG	L	M	4 5		New project
2014-037	Flood	Rebuild Beach Bathhouse at Orient Beach	The existing swimming beach bathhouse at Orient Beach is considerably lower than the base flood elevation, consequently; the building routinely floods during coastal storms. This	OPRHP	\$3,000,000	CDBG	L	M	2 5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			project will construct a new bathhouse at a higher elevation, and will incorporate flood resiliency features into the facility.								
2014-038	Flood	Mills-Norrie State Park - Norrie Point Improvements	The Hudson River National Estuarine Research Reserve environmental center and offices are located on the Hudson River. The center provides a marina, parking area, roadway, restrooms, and a picnic area to the general public. This project will implement a number of storm-proofing and resiliency measures to make the area less vulnerable to flooding and damage during storm surges on the Hudson.	OPRHP	\$4,000,000	CDBG	L	M	5		New project
2014-039	Flood	Harriman State Park Dam Code Upgrades	There are several dams in Harriman State park that are rated as High Hazard - funding would be used to upgrade dams to meet current dam safety codes	OPRHP	\$50,000,000	CDBG	S	M	4 5		New project
2014-040	Flood	Flood Studies for Non Tunnel Facilities	Determine vulnerabilities and conceptual designs for mitigation work at non-tunnel facilities.	MTA			S	M	1 5		New project
2014-041	Flood	Conduct scour studies on critical bridges	Conduct scour studies on critical bridges to determine prioritization of the most critical bridges for repairs to be scheduled.	DOT		HMGP	S	M	1 2		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-042	Flood	Continue to execute the Governor's Executive Order for DOT to assist local governments	Continue to replace culverts, conduct stream work and retaining walls to mitigate future problems, improving infrastructure, culverts, roads, repairing washouts and increasing culvert size.	DOT			L	M	5		New project
2014-043	Flood	Critical infrastructure Assessments of Hurricane Sandy and 2011 extreme weather events	FHWA Participating pilot: "New York - New Jersey - Connecticut Transportation Vulnerability Assessment and Adaptation Analysis". NYSDOT is partnering with the North Jersey Transportation Planning Authority (NJTPA), New York Metropolitan Transportation Council (NYMTC), South Western Regional Planning Agency (SWRPA), and the Greater Bridgeport Regional Council (GBRC), New Jersey and Connecticut DOT's to assess the effects of Hurricane Sandy and 2011 extreme weather events to analyze adaptation strategies for critical infrastructure. A final report will highlight the Region's most vulnerable transportation assets and analyze the adaptation measures available. Pilot Partnership with NYSDOT is partnering with the North Jersey Transportation Planning Authority (NJTPA), New York Metropolitan Transportation Council (NYMTC), South Western Regional Planning Agency (SWRPA), and the Greater	DOT, NYMTC, MTA	\$675,000 plus staff time	FHWA	L	M	1 2		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			Bridgeport Regional Council (GBRC), New Jersey and Connecticut DOT's.								
2014-044	Flood	Design new bridges to accommodate a 50-year flood	Design new bridges to accommodate a 50-year flood. Stream channels are lined with heavy stone to mitigate against bank erosion. At stream crossings, newly designed bridges are founded on sound rock to prevent scour on bridge substructure elements.	DOT		Operating Budget	L	M	2 5		New project
2014-045	Flood	Flooding Vulnerability Assessment	Complete a statewide risk assessment for flooding based on experienced and projected (future) flooding; create a GIS inventory of flooding vulnerabilities to serve as a screening layer for decision makers. Hazards considered will include inland riverine flooding due to more intense precipitation as well as sea level rise and storm surge along coastlines.	DOT		Operating Budget	S	M	1		New project
2014-046	Flood	Orient Beach State Park - Maintenance Area	During major storms the parks maintenance area is susceptible to flooding, which has caused equipment damage. This project will reconstruct the facility to make it less vulnerable to coastal flooding.	OPRHP	\$750,000	CDBG	S	M	2		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-047	Flood / Hurricane	Governor Island Ventilation Seawall Project	Raise the seawall around the artificial ventilation building on Governor's Island.	MTA			L	M	5		New project
2014-048	Flood / Hurricane	Harden all MTA B&T Facilities	Perform work to harden those areas that are required to maintain B&T operations and relocate electronic systems to less vulnerable locations.	MTA			L	M	2		New project
2014-049	Flood/ Climate Change	Conduct research on rainfall extremes across New York State for use in making policy decisions	NYSDOT is participating in NYSERDA research projects with Cornell University's Department of Earth and Atmospheric Sciences will be completed by end 2015. This project will model projected rainfall extremes for future time periods across New York State, to allow policy makers to make decisions based on the most up-to-date science.	DOT		HMGP, PDM	S	M	1		New project
2014-050	Flood (Dam)	Back up Control Generators	Permanent backup generators have been installed at the eight movable dams in Montgomery and Schenectady counties in order to operate the water control structures during power outages. If funding from outside sources were to become available, permanent generators would be installed at additional locations and would provide considerable flood mitigation.	Canal Corp.	\$500,000 (Total)		S	H	2		New project
2014-051	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock C-1 Waterford	Canal Corp.	\$50,000	HMGP	S	H	2		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-052	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Court Street Dam Rochester	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-053	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Delta Reservoir Rome	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-054	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock C-12 Whitehall	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-055	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock C/S-1 Cayuga	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-056	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock E-18 Jacksonburg	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-057	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock E-23 Brewerton	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-058	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock E-24 Baldwinsville	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-059	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock E-26 Clyde	Canal Corp.	\$50,000	HMGP	S	H	2		New project
2014-060	Flood (Dam)	Back up Control Generators	Backup Control Generator Location: Lock E-27 Lyons	Canal Corp.	\$50,000	HMGP	S	H	2		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-061	Flood	Implementation of watershed-based Flood Warning Systems for Champlain, Erie, Oswego, Cayuga/Seneca Canals	Implementation of watershed-based Flood Warning Systems for the Upper Hudson River Basin (Champlain Canal), Mohawk River Basin (Erie Canal) and Oswego River Basin (Erie, Oswego, and Cayuga/Seneca Canals) would lower the risk to flood prone communities and the associated financial losses by enabling the State, emergency managers and the public to view and understand the areal extent of forecasted flood conditions. Additionally, the ability of communities to appropriately prepare and protect lives, private property, public infrastructure and critical facilities can result in as much as a 30% reduction in damages by providing accurate forecasted flood conditions in advance of severe events and on a real-time basis. The funding would be used as a direct grant for system design, gage installation and operation, model development, and creation and operation of the Flood Warning Systems. An operating funding component for this project would be needed throughout the life of the project.	Canal Corp.	\$8,517,500		S	H	3		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-062	Flood	Modify and removal of water control structures	Modify the water control structures to remove the hydraulic obstructions associated with the lower gates and uprights to remove the ability of debris to accumulate at these locations	Canal Corp.	\$30,637,965	PAHMP-4031, Thruway General Reserve	S	H	4		New project
2014-063	Flood	Water Control Gate Automation	Water Control Gate Automation - The automation of water control gates is being piloted at the NYS Canal Corporation's Utica Taintor Gate Dam to minimize flood damage through the elimination of delays in manual operation. This project is currently under construction with an expected completion in mid-2016. If funding from outside sources were to become available, water control gate automation at other locations would provide considerable flood mitigation. Proposed locations and estimated costs are as follows, funding for these locations will allow the expansion of automated control gates.	Canal Corp.			S	H	2		New project
2014-064	Flood		Water Control Gate Automation Location: Court Street Dam Rochester	Canal Corp.	\$3,500,000	HMGP	S	H	2		New project
2014-065	Flood		Water Control Gate Automation Location: Delta Reservoir	Canal Corp.	\$1,000,000	HMGP	S	H	2		New project
2014-066	Flood		Water Control Gate Automation Location: Lock C-1 Waterford	Canal Corp.	\$1,800,000	HMGP	S	H	2		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-067	Flood		Water Control Gate Automation Location: Lock C-12 Whitehall	Canal Corp.	\$1,000,000	HMGP	S	H	2		New project
2014-068	Flood		Water Control Gate Automation Location: Lock C/S-1 Cayuga	Canal Corp.	\$1,800,000	HMGP	S	H	2		New project
2014-069	Flood		Water Control Gate Automation Location: Lock E-18 Jacksonburg	Canal Corp.	\$1,100,000	HMGP	S	H	2		New project
2014-070	Flood		Water Control Gate Automation Location: Lock E-23 Brewerton	Canal Corp.	\$2,400,000	HMGP	S	H	2		New project
2014-071	Flood		Water Control Gate Automation Location: Lock E-24 Baldwinsville	Canal Corp.	\$1,000,000	HMGP	S	H	2		New project
2014-072	Flood		Water Control Gate Automation Location: Lock E-26 Clyde	Canal Corp.	\$1,000,000	HMGP	S	H	2		New project
2014-073	Flood		Water Control Gate Automation Location: Lock E-27 Lyons	Canal Corp.	\$1,300,000	HMGP	S	H	2		New project
2014-074	Flood	Main Mill Dam (Imperial)	Lower spillway to safely pass design storm. Impoundment sediment removal will be required.	DEC	\$4,500,000	NYWI	S	H	4 5		New project
2014-075	Flood	Papish Pond Dam	Reconstruction of outlet structure to improve flow capacity.	DEC	\$550,000	NYWI	S	H	4 5		New project
2014-076	Flood	Marcell Roth Dam	Reconstruction of outlet structure to improve flow capacity, and the addition of embankment to improve stability.	DEC	\$500,000	NYWI	S	H	4 5		New project



FLOOD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-077	Flood	Hatchery Dam (Oneida)	Replacement of spillway structure to correct flow deficiencies.	DEC	\$800,000	NYWI	S	M	4 5		New project
2014-078	Flood	Avon Marsh Dam	Reconstruction of outlet structure to improve flow capacity and addition of embankment to improve stability.	DEC	\$500,000	NYWI	S	M	4 5		New project
2014-079	Flood	Johnson City Flood Control Project	Survey, vegetation removal, concrete repairs, shoal removals, closure repairs, drainage improvements, pipe repairs, levee improvement, flap gate replacement.	DEC	\$783,600	NYWI	S	M	4 5		New project
2014-080	Flood	Lilse Flood Control Project	Survey, inspect conduit, closure improvements, rodent control & damage repair, vegetation removal.	DEC	\$206,400	NYWI	S	M	4 5		New project
2014-081	Flood	Port Dickinson Flood Control Project	Upgrade pump station, inspect & repair conduits, rodent control & damage repair.	DEC	\$346,400	NYWI	S	M	4 5		New project
2014-082	Flood	Twin Orchards Flood Control Project	Survey, rodent control & damage repair, rip rap, vegetation removal, drainage improvements and inspect conduits.	DEC	\$148,300	NYWI	S	M	4 5		New project
2014-083	Flood	Corning & Painted Post	Concrete repairs, rodent control & damage repair, inspect conduits, survey, vegetation removal, levee repairs, and pump station improvements.	DEC	\$1,339,788	NYWI	S	M	4 5		New project



HIGH WINDS MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-084	High Winds / Hurricane	Infrastructure Reinforcement	Study, design, and construct bridge features that mitigate against the effects of severe windstorm events.	MTA			L	L	2 5		New project



LANDSLIDE MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-085	Landslide	Continue assessments to identify vulnerable slopes statewide.	Continue identifying and creating a master document of vulnerable slopes state wide using input from regions within the state as a resource to aid in the creation of a master list to monitor for changes in risk. Geotech engineers will create a GIS mapping system with layers.	DOT			L	M	1		New project
2014-086	Landslide	Continue FHWA pilot plan on Assets /Risk Assessment of the asset management plan to meet federal legislation.	NYS is a pilot state program for Asset/Risk Assessment. NYS has engaged a consultant to work on risk assessment, risk registry, as part of the plan which is scheduled to be in place by May 2014. (The plan is currently in the process of being written. This plan will meet the federal legislation requirement.	DOT		FHWA	S	H	1		New project
2011-087	Landslide	Landslide Hazard Data & Susceptibility Mapping	Continue and enhance efforts to promote awareness of landslide hazard via improved and more accessible mapping. Increase scale of landslide hazard mapping to 1:24,000 or higher via latest digital topography. Create and gather GIS layers of several instability factors such as Soil Type, Slope, Hydrology, Road Network and Drainage	DHSES, USGS, NYSDOT, NYSGS and all county EM, CSICC		HMGP	S	H	1 3	Limited progress. Budget constraints precluded hiring expert to validate certain data that would have allowed us to expand the 2008 Schenectady Co. pilot to a State wide program.	The first phase of the 2008 Schenectady Co. pilot has been completed. An application has been submitted to the Hazard Mitigation Grant Program to expand the study statewide. The application is for the second phase of the project, which will be to further the study in Essex County.



LANDSLIDE MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			Network. The identified Sources are Natural Resources Conservation Services' Soil Survey, the State Digital Elevation Model, etc. Establish a working relationship with critical agencies and develop a Memorandum of Understanding between NYSDOT, NYSGS and USGS to collect subsurface data, samples and exchange the analytical data in order to better develop data sets relating to the landslide hazard.								
2011-088	Landslide	Slope Stability	Continue to undertake slope stabilization and landslide projects to fix loss of ground and prevent future movements which could undermine or bury highway infrastructure. DOT also stabilizes rock slopes to mitigate against the effects of rock slope failures and rockfalls on motorists.	NYSDOT			S	M	2.5	Ongoing program with continued progress.	Update pending



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-089	Multi-hazard/ Hurricane	Juvenile Justice Center Generators	OCFS is looking to replace a total of 23 generators in the following Juvenile Justice Centers, and training facilities. Backup power generators are essential for the continued operation and care of youth in custody. The following is the breakdown by facility, number of generators and county. Below find the breakdown by facility, number of generators, and county: Highland Residential Center (RC) (13) Ulster County, Taberg RC for Girls (2) Oneida County, Finger Lakes RC (1) Tompkins County, Red Hook RC(1) Columbia County, Sgt Henry Johnson (1) Delaware County, Allen (1) Delaware County, Brookwood SC (1) Columbia County, Brentwood RC (1) Nassau County, Parker Training Academy (2) Columbia County.	OCFS	\$1,500,000		S	M	2		New project
2014-090	Multi-hazard/ Hurricane	Switch gear upgrades at the East Campus, serving the hospital	Grant was requested to provide improved electrical service to the hospital by upgrading existing switch gear.	SUNY		HMGP	S	H	2		New project
2014-091	Multi-hazard/ Hurricane	Back up electrical power system at Westbury	Request for Hazard Mitigation Grant for electrical power system back up.	SUNY		HMGP	S	H	2		New project



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2014-092	Multi-hazard/ Hurricane	Backup generator at HAB center	Grant was requested to provide for generator in the main administrative building (HAB Center) to provide for better continuity of operations during power outage conditions.	SUNY		HMGP	S	H	2		New project
2014-093	Multi-hazard/ Hurricane	Backup generator at Elting Gym	Provide emergency generator set with some additional wiring to Elting Gym, a designated emergency shelter building, under agreement with the American Red Cross.	SUNY		HMGP	S	H	2		New project
2014-094	Multi-hazard/ Hurricane	Backup Power for 16,000 Gallon Fuel Storage Pumps and Infrastructure	Grant was requested to provide emergency power to the pumps and other infrastructure for the 16,000 gallon fuel supply. During Sandy the campus was unable to access its reserves.	SUNY		HMGP	S	H	2		New project
2014-095	Multi-hazard/ Hurricane	Emergency Generator at Empire Commons	Provide emergency generator to power Empire Commons, a residential community. Such capability would permit for longer shelter in place.	SUNY		HMGP	S	H	2		New project
2014-096	Multi-hazard/ Hurricane	Emergency Generator at Memorial Hall	Provide emergency generator to power Memorial Hall. This space may be designated to shelter campus and/or community populations during an emergency.	SUNY		HMGP	S	H	2		New project
2014-097	Multi-hazard/ Hurricane	Emergency Generator at the College Center	Provide emergency generator to power the Campus Center. This space may be designated to	SUNY		HMGP	S	H	2		New project



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			shelter campus and/or community populations during an emergency.								
2014-098	Multi-hazard/ Hurricane	Emergency Generator at the Field House	Provide emergency generator to power the Field House. This space may be designated to shelter campus and/or community populations during an emergency.	SUNY		HMGP	S	H	2		New project
2014-099	Multi-hazard/ Hurricane	Stand-by Generator Installations	OPWDD community residences are designed to meet the needs of vulnerable individuals by providing the critical infrastructure tailored for the population residing in the residence. OPWDD is currently installing stand-by electrical generators in community residences, to provide continuity of operations during power outages caused by local outages and /or severe weather events.	OPWDD 1, 2, 3, 4 & 6	\$3,267,500	Operational budgets	S	H	2 3		New project
2014-100	Multi-hazard/ Flood/ Hurricane	Elevate sewage lift station controls	During previous rain events associated with severe weather patterns, the sewage lift station flooded causing extensive damage to the electrical components associated with the lift station. Major disruption of services occurs in meeting the needs of the developmentally disabled staff through displacement of service staff and the closing of buildings that these services are provided in.	OPWDD, State Operations Region 2: Newark Campus	\$33,000	Operational budgets	S	H	2		New project



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX

Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			The failure of the lift station results in backed up sewage within buildings creating an unsanitary condition. Additionally, structure damage can result from these backups. By elevating the controls for pumps and other equipment above the predicted water levels resulting from flood events, the disruptions become minimized.								
2014-101	Multi-hazard	Continue GIS tracking system of assets	Continue GIS tracking system database that includes all local bridges, state assets, culverts, bridges with spans over 20" and large culverts that span 5" to 20".	DOT			S	M	1		New project
2014-102	Multi-Hazard	Road Map activities	Implement the SHMP Road Map activities outlined in Section 4, Table 4.	DHSES		HMGP	S	H	1		New project
2011-103	Multi-hazard	Enhance GIS database through increased collaboration	Increase collaboration among local-State technical resources such as GIS, databases, partner with universities and industries to share technical resources and data (GIS layers), and develop GIS resources to support local government mitigation planning efforts.	DHSES, State Agencies			S	M	1	The state continues to make progress with collaboration efforts. Partnering with the NYS GIS Clearing House has significantly expanded so all NYS agencies, various NGO's and many municipalities across the State to share and access GIS data. Efforts to extend and improve on satellite imagery and	Update pending



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX

Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
										LiDAR data continues. New products on sea level rise/flood inundation have been developed by NY NGO's and are being used. However extreme budgetary constraints have and will continue to limit our ability to fully meet needs.	
2011-104	Multi-hazard	Comprehensive Public Education Hazard Awareness Program	<p>Part 1. Continue the Hazard Awareness Program - Maintain NYS citizens and public officials' awareness of natural hazards via the program network capabilities including NYS web site and links, circulating print media, and public service news release.</p> <p>Part 2. Public Education Hazard Awareness Program Enhance the Hazard Awareness Program - Assess program to ensure comprehensive format and collaborate with State agencies to improve information dissemination, i.e. County links to the State Web site and other appropriate outlets.</p> <p>Part 3. General Hazard Awareness Continue and advance hazard awareness initiatives, consider accomplishing initiatives via</p>	DHSES, OTDA, & appropriate State and Local agencies including DOS, DEC, FEMA, Education Department, American Red Cross and NWS			0	H	3	<p>1. The state has made continued progress; and will make every effort further improvement, within the current budgetary constraint.</p> <p>2. Good Progress has been made within the state and local emergency management system. DOS disseminates information pertaining to hazard management and watershed planning on its website. The Division of Coastal Resources recently completed material on watershed planning to be used in public outreach.</p> <p>3. School health curriculum programs</p>	Update pending



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
			Schools and Curriculum Development.							continue to stress the importance of personal preparedness. OTDA maintains an intranet site for use by its employees & local district offices that provides Disaster Information.	
2011-105	Multi-hazard	Natural Hazard Analysis data and mapping	Enhance existing statewide hazard analysis data and mapping and continue to improve efforts to make data accessible. Continue use of GIS mapping technology to develop and improve hazard mapping and vulnerability assessments. For instance, consider exploring use of real property data and overlay with landslide hazard characteristics (topo and soils) data to identify vulnerable structures and to assist with hazard mitigation requirements, such as vulnerability assessment and loss estimation. Utilize DHSES web site for web based downloadable hazard information. Encourage NYS Agency contribution to and promote community use of NYS GIS Clearinghouse.	DHSES, Geological Services, DEC, OGS			S	M	1	Continued progress. DHSES will continue to make efforts to develop additional GIS hazard mapping products and make those available thru the NYS GIS Clearinghouse.	Update pending



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX

Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
2011-106	Multi-hazard/ Hurricane	Public and Local Officials Education – Mitigation through Hazard Resistant Construction	Enhance efforts to educate NYS citizens and local officials regarding hazard resistant construction methods.	DHSES, DOS, DEC Local Mitigation Planners			0	M	1 3	Limited progress to date has been made on this item. Further action is needed to improve on activity.	Update pending
2011-107	Multi-hazard	Damage loss estimation for NYS government critical facilities	Analyze individual NY State critical facilities to determine potential loss from natural hazards. Conduct detailed loss assessment using NYS OGS fixed asset database, NYS Cyber Security Critical Infrastructure Coordination database and available hazard maps including Q3 and similar maps. Gathering state facility data such as building attributes, positional accuracy, and natural hazard loss estimation will continue through agency partnerships and collaboration in order to support more accurate vulnerability analysis and loss estimation.	DHSES, OGS, All State Agencies		NY State Operating Budget-Federal Grant funds	S	H	1	Efforts to create better data sets are ongoing. Progress has been delayed due to the lack of some information, such as, first floor elevation and latitude/longitude for spacial accuracy.	The first phase of a comprehensive statewide facility inventory project will be implemented Fall 2013, which will develop the methodology to identify risk to state facilities based on hazard vulnerability. The expected completion of Phase one is 2014.
2011-108	Multi-hazard	Promote hardening of NYS Government and State critical facilities to increase resistance to natural hazards	Protect critical government facilities– prioritize structural and non-structural retrofits based on hazard vulnerability analysis.	OGS, DHSES All State Agencies		State operating budget & Federal Mitigation Funds	L	H	2	Continued progress has been made. Facility managers will continue to mitigate for the effects of natural hazards.	The first phase of a comprehensive statewide facility inventory project will be implemented Fall 2013, which will develop the methodology to identify risk to state facilities based on hazard vulnerability. The expected completion of Phase one is 2014. This activity is an expected outcome of the previous activity.
2011-109	Multi-	NY Alert	Encourage utilization of NY-	DHSES			0	H	3	Effort is ongoing.	Encourage State agencies, county and



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX											
Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
	hazard		Alert statewide: NY-Alert currently has 6.3 million subscribers. Of these, 2.79 million subscribers can receive reverse 911 notifications because their counties have incorporated their 911 databases into the NY-Alert system.								local governments, emergency service agencies and institutions of higher learning to participate in the public warning system. Continue public education and awareness efforts.
2011-110	Multi-hazard/ Coastal Erosion/ Hurricane /Climate Change	Acquisition of Land	Continue to purchase land & explore enhancement options that may prevent development encroachment into hazardous areas. Identifying alternate funding sources for land acquisition resulting in open space or some sort of development prevention in a hazard area is a fundamental form of hazard mitigation.	NYS Parks, NYSDEC (Coastal Erosion) DHSES		Environmen tal Protection Fund & federal grant funding	S	H	2	NYS Parks, DEC, & DHSES continue to pursue properties as well as funding for acquisitions to reduce the vulnerability of structures in hazard prone areas as well as the preservation and addition of open-space in NYS.	Update pending
2011-111	Multi-hazard/ Flood/ Hurricane/ Climate Change	Repetitive Loss Properties -	Identify & Mitigate Severe Repetitive Loss (SRL) and Repetitive Loss Properties. Continue and enhance the comprehensive loss reduction efforts to target repetitive loss properties for mitigation including acquisition and appropriate retrofit of structures.	FEMA, DHSES, DEC		FEMA: HMGP, FMA, and PDM CDBG	S	H	2 3 5	On-going program efforts with continued progress Project funding sources, such as Severe Repetitive Loss Program (SRL) and Repetitive Flood Claims Program (RFC).	Funding allocated through the Community Development Block Grant (CDBG) program. By the terms of Federal law, activities using NYS CDBG-DR funding may be funded in the following counties: Albany, Bronx, Broome, Chemung, Clinton, Columbia, Delaware, Dutchess, Essex, Fulton, Greene, Herkimer, Kings, Montgomery, Nassau, New York, Oneida, Orange, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk,



MULTI-HAZARD MITIGATION ACTION AND ACTIVITIES MATRIX

Year/ Activity Number	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Ranking	Mitigation Goal	2011 Status	2014 Status
											Sullivan, Tioga, Ulster, Warren, Washington, and Westchester.
2011-112	Multi-hazard	Bridge Safety Assurance	DOT is developing a program to assess a bridge's relative vulnerability to the different modes of failure (scour, overloads, steel detail deficiencies, collision, concrete detail deficiencies & earthquakes).	DOT		Operating Budget	0	H	1 2		Update pending



MITIGATION ACTION AND ACTIVITIES MATRIX											
Year	Hazard	Title	Description of Activity	Agency	Est. Cost (General dollar amount)	Funding Source	Timeframe	Priority Rating	Mitigation Goal	2011 Status	2014 Status
2011-114	Wildfire	Forest Fire Safety Awareness and Public Education	Continue Public education and public awareness as key areas in a wildfire prevention program. Programs such as Firewise Communities encourage local solutions for safety by involving homeowners in taking individual responsibility for mitigating their homes from the risk of wildfire. Increase the use of Public Service Announcements, offering a Wildfire Survival Program and developing a pamphlet on the use and benefit of such programs.	DEC	\$10,000	OFSA	0	H	3		NYS receives \$24,000 in grant funding through an annual grant, which has recently turned into a 6-year grant cycle.



In the process of reviewing mitigation actions and activities for the 2014 SHMP update, the SHMP Team reviewed and determined the current status for four “short-term initiatives” that were noted in the 2011 plan. Although competing priorities between 2011 and 2014 limited the State’s ability to report on each of the initiatives within the timeframes noted below, good progress has been made on three of the four topics, with some progress made on the fourth.

- 1. Review the Plan’s Flood Risk Assessment components to:** a) consider reorganizing information to facilitate its use in local plans and explain how to use the Plan’s resources in developing local plans; b) explain how to determine the availability of DFIRM maps, how to access and use them, and what to do if they are not available for a jurisdiction; and c) discuss FEMA’s new Risk MAP (Risk Mapping, Assessment and Planning) Program and its objectives as they evolve and are developed, and provide web links to the most current Risk MAP information on FEMA’s web site (estimated 4-6 months).

2014 Status: Good progress has been made. The 2014 SHMP Flood Hazard section has been reorganized to include significant local plan information related to flood; data update on the availability of DFIRM maps; and Risk MAP status of the State’s partnership to conduct updates for map flooding. Risk MAP has progressed in phases and will continue into the next plan cycle.

- 2. Create a section to guide local plan writers by providing:** a) clear descriptions of mitigation measures (as opposed to response measures) and provide sample action plans; b) a primer describing the steps in creating a mitigation plan, their sequence and timeframes, and the tools and skill sets needed to accomplish each task; and c) sample risk assessment information organized by hazard and explaining how to use the Plan’s data to determine a jurisdiction’s own vulnerability (estimated 4-6 months).

2014 Status: Limited progress has been made. The DHSES Mitigation Section has had to reprioritize limited staff for local plan reviews and post-disaster mitigation actions between 2011 and 2014. SHMP Team suggests carrying the initiative forward into the next planning cycle.

- 3. Reorganize the Plan’s vulnerability materials to:** a) provide guidance and clarity to local plan writers; b) consistent with security protocols, provide a general discussion of the types, numbers, and locations of State critical facilities to better inventory to State’s assets and assist State and local Continuity of Operations (COOP)-Continuity of Government (COG) efforts (estimated 5-7 months).

2014 Status: Good progress has been made. a) The Hazard Identification Risk Assessment (HIRA) Sections of the 2014 SHMP have been restructured to strictly follow the 44 CFR 201.4. Individual hazard sections follow the same formats; making it easier to locate characteristics, vulnerabilities and loss information. b) A Statewide Fixed



Assets Inventory Project was initiated in September 2013, with a pilot phase scheduled for completion in mid-2014. It is anticipated that this will be a multi-year project.

4. **Clarify updated material in the Plan by developing a consistent approach at the start of each section:** an example would be to list: a) what the section covers and hopes to accomplish; b) what significant changes are incorporated (or not); c) “local plan writers should pay particular attention to....” (5-7 months)

2014 Status: Initiative parts a) and b) have been accomplished by revision of the 2014 SHMP. Part c) can be integrated into initiative #2, above, and this initiative can be removed.

On-Going “Roadmap Activities”

During the 2014 SHMP update process, additional planning activities were identified for further development during the life cycle of the 2014 plan. These activities will be considered as the State’s “Road Map” to continue enhancing the mitigation plan and program. The Roadmap table is included in this plan as **Appendix 6**.

4.4.4 Progress on Mitigation Actions and Activities

For the first time, a “Mitigation Progress” table has been included in the 2014 SHMP to provide a comprehensive report on the State’s progress in achieving mitigation goals through implementing activities. This list will be maintained during the monitoring, evaluation and update process described in **Section 6 – Plan Maintenance**, with the goal of providing detailed information in future updates related to activities that have presented the greatest opportunity to reduce the vulnerabilities from specific hazards, and quantifying losses avoided.



Table 4.4g: Progress on Mitigation Actions and Activities

Year Added	Proj. No.	Project Title	Project Descriptions	Agency	Hazard Mitigated	Total Project Cost	Funding Source	Losses Avoided (dollars, benefits)	Progress/ Status
N/A	N/A	Event Specific Mitigation	Electrical and mechanical equipment for lock and dam structures has been relocated to higher elevations to avoid repetitive flood damage due to water inundation. Lockhouses, which are re-constructed in flood prone areas, are now placed on piles to avoid scour damage and foundation failure. Dam spillways are constructed to meet or exceed current design standards to reduce future flood damage.	NYS Canal Corp	Flood	Cost Unknown	Funding Source Unknown	TBD	Completed project
2014	N/A	New York State Wildfire Management Plan	Comprehensive plan to mitigate wildfires across the state - outlines plans for training, firefighting, fuel management and prevention education.	DEC	Wildfire	Cost Unknown	Operating Budget	TBD	Completed project



Year Added	Proj. No.	Project Title	Project Descriptions	Agency	Hazard Mitigated	Total Project Cost	Funding Source	Losses Avoided (dollars, benefits)	Progress/ Status
2011	LS6	Establish a working relationship with critical agencies	Develop a Memorandum of Understanding between NYS DOT, NYSGS and USGS to collect subsurface data, samples and exchange the analytical data in order to better develop data sets relating to the landslide hazard.	NYS DOT , NYSGS, USGS	Landslide	N/A	Operating Budget	TBD	Component of Landslide project
2012	N/A	LIDAR	The collection of high resolution elevation data (LIDAR) in 2012 through the NOAA Coastal Services Center. The collection covers the entire tidally-influenced shoreline of NYS from the federal dam at Troy to Long Island (excluding New York City). This data is being used in order to identify areas at greatest risk of coastal flooding, areas of potential tidal wetland mitigation, and to remap state-regulated Coastal Erosion Hazard Areas.	DEC	Coastal Erosion, Climate Change	Cost Unknown	Hudson River Estuary Program	TBD	Completed project
2014	N/A	Sustainable Shoreline Project	Development of guidance for communities on the tradeoffs among management options for controlling shoreline erosion, including relative costs, impacts on habitat functions, and resilience to storms and sea level rise. The project included a series of green shoreline demonstration projects including the design of two ecologically-enhanced (or "green") shoreline treatments to control erosion on shorelines in Cold Springs and Nyack.	DEC	Coastal Erosion	N/A	Hudson River Estuary Program	TBD	Funded



Year Added	Proj. No.	Project Title	Project Descriptions	Agency	Hazard Mitigated	Total Project Cost	Funding Source	Losses Avoided (dollars, benefits)	Progress/ Status
2014	N/A	Assessing Flood Risk in the Mohawk and Hudson River Basin	Research at the State University of New York (SUNY) School of Environmental Science and Forestry to characterize causes of flooding in the Mohawk and Hudson River valleys, including high precipitation, ice dams, and storm surge, and evaluate the relative contribution of upland watershed flow and storm surge to water levels on the main channel of the Hudson River. This will create a statistical framework for assessments of how future flood risk may change.	DEC	Hurricane, Coastal Erosion	Cost Unknown	Hudson River Estuary Program	TBD	Funded – Completion date TBD
2014	N/A	Kingston Waterfront Task Force	Scenic Hudson, the Hudson River National Estuarine Research Reserve, NYS Department of State and the Consensus Building Institute have been working with the Hudson River Estuary Program to design a waterfront flooding task force process for the City of Kingston, NY. The process allows Hudson River waterfront communities to select sea level rise and storm scenarios, undertake a simplified local flood vulnerability assessment, complete a site specific cost-benefit analysis for adaptation strategies to protect their waterfronts, and develop a roadmap for locals. DEC contracting with Catalysis Adaptation Partners (CAP) to use their Coastal Adaptation to Sea level rise Tool (COAST) to undertake the program's cost benefit analysis. The final report is complete and a public meeting is scheduled for fall 2013.	DEC	Climate Change, Flood, Coastal Erosion	Cost Unknown	Hudson River Estuary Program	TBD	Funded



Year Added	Proj. No.	Project Title	Project Descriptions	Agency	Hazard Mitigated	Total Project Cost	Funding Source	Losses Avoided (dollars, benefits)	Progress/ Status
2014	N/A	Habitat Corridor Mapping in the Hudson Valley	Cornell University is working with the Estuary Program to develop a landscape-scale habitat connectivity map based on changes in species distribution caused by climate change. This will help to prioritize land conservation for north-south corridors to allow wildlife migration as the climate changes (plants, animals, and ecosystems).	DEC	Climate Change	Cost Unknown	Hudson River Estuary Program	TBD	Funded
2014	N/A	Long-term Water Level Monitoring Station in the Hudson Estuary	The Hudson River National Estuarine Research Reserve is leading an effort to install a long term water level monitoring station in the Hudson Estuary near Kingston, in partnership with NOAA. This station will help resolve water levels and tide stages for the estuary and track long-term sea level rise.	DEC	Climate Change, Coastal Erosion	Cost Unknown	Hudson River Estuary Program	TBD	Funded
2014	N/A	SLAMM Modeling in the Hudson Estuary	Cornell University and Scenic Hudson are using the SLAMM (Sea Level Rise Affecting Marshes Model) to model potential marsh migration in the Hudson Estuary to develop shoreline conservation priorities and assess the need for barrier removal to facilitate the landward migration of tidal wetlands as sea level rises. Loss of tidal wetlands can impact water quality especially in drought or heat extremes.	DEC	Climate Change, Coastal Erosion	Cost Unknown	Hudson River Estuary Program	TBD	Funded



Year Added	Proj. No.	Project Title	Project Descriptions	Agency	Hazard Mitigated	Total Project Cost	Funding Source	Losses Avoided (dollars, benefits)	Progress / Status
2014	N/A	Hudson Estuary Watershed Resiliency Project	The Estuary Program is funding Cornell Cooperative Extension staff in Columbia, Dutchess, Greene, Orange and Putnam counties to conduct outreach to municipal and landowner audiences in target watersheds on flood resiliency. This effort will address the need for communities to enhance their understanding of stream dynamics, floodplain function and watershed planning to enhance their vulnerability to floods. The project will also evaluate the capacity of communities to respond to floods in a manner that ensures the long-term viability of stream systems and reduces future flooding impacts.	DEC	Flood, Coastal Erosion	Cost Unknown	Hudson River Estuary Program	TBD	Funded
2014	N/A	Climate Smart Communities Certification Program	The Hudson River Estuary Program is funding Vanesse Hagen and Brustlin (VHB) to develop a certification program for the NYS Climate Smart Communities Program. The work is being piloted in four communities in 2013. The program track active Climate Smart Communities and recognize the most active communities. The project will design a roadmap for community climate action.	DEC	Climate Change, Coastal Erosion	Cost Unknown	Hudson River Estuary Program	TBD	Funded
2014	N/A	Oakwood Beach, Staten Island (PL 84-99)	Repair levee and replace damaged electrical equipment	DEC	Hurricane, Coastal Erosion	\$200,000	Federal	TBD	Funded, in progress
2014	N/A	Coney Island Public Beach (PL 84-99)	Repair and re-nourish beach to original design profile	DEC	Hurricane, Coastal Erosion	\$28,000,000	Federal	TBD	Funded, in progress
2014	N/A	Rockaway Public Beach (PL 84-99)	Repair and re-nourish beach to original design profile	DEC	Hurricane, Coastal Erosion	\$84,000,000	Federal	TBD	Funded, in progress



Year Added	Proj. No.	Project Title	Project Descriptions	Agency	Hazard Mitigated	Total Project Cost	Funding Source	Losses Avoided (dollars, benefits)	Progress / Status
2014	N/A	Fire Island Inlet, Gilgo Beach (PL 84-99)	Repair and re-nourish Gilgo Beach back to pre-storm profile	DEC	Hurricane, Coastal Erosion	\$21,046,640	Federal	TBD	Funded, in progress
2014	N/A	Tobay Beach, Town of Oyster Bay	Re-nourish beach area to support new dunes and pavement	DEC	Hurricane, Coastal Erosion	\$2,355,250	NY Works	TBD	Funded, in progress
2014	N/A	Overlook Beach, Town of Babylon	Repair beach; linked to USACE Gilgo Project (PL 84-99)	DEC	Hurricane, Coastal Erosion	\$424,000	NY Works	TBD	Funded, in progress
2014	N/A	Westhampton Interim Project (PL 84-99)	Repair and re-nourish beach to original design profile	DEC	Hurricane, Coastal Erosion	\$34,000,000	Federal	TBD	Funded, in progress
2014	N/A	West of Shinnecock (PL 84-99)	Repair and re-nourish beach to original design profile	DEC	Hurricane, Coastal Erosion	\$10,000,000	Federal	TBD	Funded, in progress
2014	N/A	Coney Island / Sea Gate	Stabilize beach through re-nourishment and building T-groins	DEC	Hurricane, Coastal Erosion	\$30,000,000	Federal	TBD	Funded, in progress
2014	N/A	Rockaway Storm Damage Reduction Project	Study being completed analyzing three alternatives to increase beach stability, relocate boardwalk, and increase resiliency	DEC	Hurricane, Coastal Erosion	\$1,500,000	Federal	TBD	Funded, in progress
2014	N/A	Long Beach Island Storm Damage Reduction Project	Complete study of beach and dune erosion; construct beach and dune system	DEC	Hurricane, Coastal Erosion	\$1,000,000	Federal	TBD	Funded, in progress
2014	N/A	Fire Island to Montauk Point (FIMP)	Beach and dune re-nourishment, breach closure planning, elevation of homes on mainland Long Island, elevation of utilities and roads	DEC	Hurricane, Coastal Erosion	\$700,000,000	Federal	TBD	Funded, in progress
2014	N/A	Fire Island Stabilization Project- part of FIMP	Rebuilding dunes to 15' and beach re-nourishment; may involve property acquisition to allow new alignment	DEC	Hurricane, Coastal Erosion	Cost Unknown	Federal	TBD	Funded, in progress
2014	N/A	Montauk Point Lighthouse Storm Damage Reduction Project	Stabilize rock revetments and slopes supporting Montauk Lighthouse	DEC	Hurricane, Coastal Erosion	\$500,000	Federal	TBD	Funded, in progress
2014	N/A	South Shore Staten Island	USACE to complete feasibility study to provide protection for structures using beaches, dunes, interior drainage areas, seawalls, and revetments	DEC	Hurricane, Coastal Erosion	\$1,500,000	Federal	TBD	Funded, in progress



Year Added	Proj. No.	Project Title	Project Descriptions	Agency	Hazard Mitigated	Total Project Cost	Funding Source	Losses Avoided (dollars, benefits)	Progress/ Status
2014	N/A	Oakwood Beach Natural Infrastructure Feasibility Study	Mini-feasibility study to see if wetlands can be added to USACE project for South Shore of Staten Island Feasibility Study	DEC	Hurricane, Coastal Erosion	\$469,520	NY Works	TBD	Funded, in progress
2014	N/A	Village of Asharoken Storm Damage Reduction Project	Complete feasibility study and conduct design and construct measures, including renourishment, to protect road connecting Eaton's Neck to mainland Long Island	DEC	Hurricane, Coastal Erosion	\$1,500,000	Federal	TBD	Funded, in progress
2014	N/A	Village of Bayville Storm Damage Reduction Project	Feasibility study to determine measures needed to protect Village from flooding	DEC	Hurricane, Coastal Erosion	\$2,000,000	Federal	TBD	Funded, in progress
2014	N/A	Hashamomuck Cove Storm Damage Reduction Project	Feasibility study to determine method to protect County Route 48	DEC	Hurricane, Coastal Erosion	\$2,600,000	Federal	TBD	Funded, in progress
2014	N/A	Lake Montauk Harbor Storm Damage Reduction and Navigation Project	Feasibility study to re-nourish beach, build a groin, and expand navigational channel to provide heightened protection to properties	DEC	Hurricane, Coastal Erosion	\$1,000,000	Federal	TBD	Funded, in progress
2014	N/A	Robert Moses Beach Phase II	Dredge approximately 1,200,000 CY of sand; requires impact analysis	DEC	Hurricane, Coastal Erosion	\$40,000,000	Federal	TBD	Funded, in progress



4.5 Mitigation Funding Source

New York State acknowledges the importance of not only recognizing the mitigation actions and activities that will achieve its mitigation goals and objectives, but also providing sources for funding the implementation of these activities. **Table 4.5h** provides a list of programs, descriptions, and links for local, regional, and state planners who are seeking funding sources. **Table 4.5h** indicates whether the available funding is for projects involving Regulatory, Technical, or Financial aspects of hazard mitigation.

These sources include not only programs actively providing funding for current mitigation projects (as indicated in **bold font** in **Table 4.5h**), but also those that may be of interest to local planners as potential funding sources. Several current funding sources and the respective lead agencies noted in **Table 4.5h** appear throughout this plan as integral to the successful coordination and achievement of several projects involving multiple stakeholders at the local, state, and federal levels, as well as the private sector. These funding sources include the United State Army Corps of Engineers (USACE), which is actively funding multiple hazard mitigation projects related to coastal erosion in the areas impacted by Hurricane Sandy, and the New York State Energy Research and Development Authority (NYSERDA), which has funded several collaborative studies in the area of the impacts of climate change as a result of the ongoing coordination efforts of the statewide interagency adaptation working group.

Changes of note since the 2011 Plan include the passing of the Biggert Waters Flood Insurance Reform Act of 2012 (BW-12), which made modifications to the National Flood Insurance Program (NFIP). According to FEMA's web site, the legislation "will require the NFIP to raise rates to reflect true flood risk, make the program more financially stable, and change how Flood Insurance Rate Map (FIRM) updates impact policyholders." Regarding funding sources, the legislation eliminated the Severe Repetitive Loss (SRL) and Repetitive Flood Claims (RFC) programs, rolling these into the Hazard Mitigation Assistance (HMA) grant programs. For additional information regarding these changes, local planners are encouraged to refer to FEMA's Unified Hazard Mitigation Assistance Guidance available on the FEMA web site⁵.

Additionally, the impact of repeat severe disasters since the 2011 Plan – including Hurricane Irene, Tropical Storm Lee, and Hurricane Sandy – has made available significant post-disaster funding for hazard mitigation and focused the entire state on the concepts of mitigation and resiliency, which are strongly championed by the Governor's office. Mitigation is a top priority statewide, which has energized interagency collaboration on projects and led to the reprioritization of state funds to strengthen infrastructure and support buyout programs for repetitive loss properties. The state has worked diligently with local governments and homeowners to identify and address roadblocks to buyout program success, including making additional funds available to eliminate homeowner cost shares and providing funding to help local governments identify and pre-designate

⁵ FEMA's Unified Hazard Mitigation Assistance Guidance - <http://www.fema.gov/media-library/assets/documents/33634?id=7851>



appropriate relocation development sites in order to alleviate concerns that buyout programs might erode tax bases and reduce voting populations.

Statewide initiatives such as New York Rising, New York Works, and the New York State Resiliency Institute for Storms & Emergencies (NY RISE) focus top academic leaders, policy makers, emergency experts, planners, government leaders, and first responders from throughout the state and across the nation on developing strategies and priorities for strengthening local communities and statewide capabilities and resiliency to better withstand future disaster events. As part of these initiatives, the State has implemented creative use of available funding sources, including Community Development Block Grant (CDBG) Disaster Recovery funds appropriated under Public Law 113-2, to support critical infrastructure mitigation projects in the most impacted communities from Hurricane Sandy, Hurricane Irene, and Tropical Storm Lee.

While this section and **Table 4.5h** focus on funding sources, it is important to note that many of the agencies listed as funding sources and as partners in this plan (please see **Section 2** for a detailed list of State partners and participants) are also invaluable sources of regulatory and technical information, assistance, and support. For example, county soil and water conservation districts (www.nys-soilandwater.org) provide technical assistance and tools, including GIS watershed maps; the Delaware and Susquehanna River Basin Commissions are federal-interstate commissions created to manage water resources, including flood mitigation projects, and are excellent resources for technical information and assistance; higher education partners have coordinated, funded, and performed numerous research projects in areas such as climate change, adding important data to the statewide and national discussions on these topics; and numerous institutes across New York State offer a variety of technical information, resources, and assistance (e.g., Urban Land Institute guidance on long-term rebuilding to promote resilience and adaptability to sea-level rise; environmental research and information available through the Cary Institute of Ecosystem Studies; and the newly launched New York State Resiliency Institute for Storms & Emergencies). Regional planning councils (www.cdrpc.org/nysarc.html) are another important source of technical assistance, including support for plan writing.

Local planners should note that each resource listed in **Table 4.5h** will have its own eligibility requirements and project criteria, all of which should be researched, understood, and taken into consideration when seeking funding. Certain funding sources specifically require approved hazard mitigation plans as a prerequisite for eligibility. These funding sources include all of FEMA's Hazard Mitigation Assistance (HMA) programs, which comprise the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA) grant programs.

The following is not intended to be a comprehensive list, but rather a starting point for additional research specific to the mitigation projects being undertaken. To assist local planners in this process, clearinghouse web sites have been included at each level (federal, state, and private) to provide a starting point for researching current, specifically applicable funding opportunities. It should be noted that many programs have both federal



and state components, and that many federally funded programs are administered by State agencies and thus may have a State point of contact.

Table 4.5h: Mitigation Funding Sources

Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Federal Grant and Assistance Programs for Governments	Catalog of federal disaster assistance and hazard-related grants and assistance	FEMA	http://www.fema.gov/tribal/grants-and-assistance-programs-governments		X	X
Grants.gov	Searchable catalog of federal grant opportunities	U.S. Department of Health and Human Services	http://www.grants.gov/web/grants/home.html	X	X	X
National Earthquake Hazards Reduction Program	Program research to advance understanding earthquakes occurrence and impact	National Institute of Science and Technology	http://www.nehrp.gov/index.htm		X	
Decision, Risk, and Management Science Program	Scientific research directed at increasing the understanding and effectiveness of decision making by individuals, groups, organizations, and society	National Science Foundation (NSF)	http://www.nsf.gov/funding/pgm_summ.jsp?pins_id=5423		X	
Societal Dimensions of Engineering, Science, and Technology Program	Proposals benefiting the study of interactions of engineering, science, technology, and society	NSF	http://www.nsf.gov/funding/pgm_summ.jsp?pins_id=5323&org=SES		X	
Aquatic Ecosystem Restoration	Direct support for carrying out aquatic ecosystem restoration projects that will improve the quality of the environment	Environmental Protection Agency (EPA)	http://www.epa.gov			



Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Beneficial Uses of Dredged Materials	Direct assistance for projects that protect, restore, and create aquatic and ecological habitats, including connection with dredging an authorized Federal wetlands, in navigation project	EPA	http://water.epa.gov/type/oceb/oceandumping/dredgedmaterial/beneficial_use.cfm			
Clean Water Act Section 319 Grants	Grants to States to implement non-point source programs, including support for non- structural watershed resource restoration activities	EPA	http://water.epa.gov/pollwaste/nps/funding.cfm	X	X	X
Water Grants	A variety of grants related to water and wastewater infrastructure projects, including a catalog of federal funding for watershed protection projects	EPA	http://water.epa.gov/grants_funding	X	X	X
Urban Waters Small Grants Program	Protect and restore urban waters by improving water quality through activities that also support community revitalization and other local priorities	EPA	http://www2.epa.gov/urbanwaters		X	
Coastal Zone Management Program	Grants for planning and implementation of nonstructural coastal flood and hurricane hazard mitigation projects and coastal wetlands	National Oceanic and Atmospheric Administration (NOAA)	http://coastalmanagement.noaa.gov/programs/czm.html	X	X	X
Community Development Block Grant (CDBG)	Grants to states and local governments to develop viable communities (e.g., housing, suitable living environment, expanded economic opportunities) and recover from Presidentially declared disasters; principally for low- and moderate-income areas	US Department of Housing and Urban Development (HUD)	http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs	X	X	X



Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Disaster Housing Program	Emergency assistance for housing, including minor repair of home to establish livable conditions, mortgage and rental assistance	HUD	http://www.hud.gov/news/dhap.cfm			X
HOME Investment Partnerships Program	Grants to local and state government and consortia for permanent and transitional housing, (including financial support for property acquisition and rehabilitation for low-income persons)	HUD	http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/programs/home			X
HUD Disaster Recovery Assistance	Grants to fund gaps in available recovery assistance after disasters (including mitigation)	HUD	http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/dri			X
Section 108 Loan Guarantee	Enables states and local governments participating in the Community Development Block Grant (CDBG) program to obtain federally guaranteed loans for disaster-distressed areas	HUD	http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/108			X
National Flood Insurance Program	Formula grants to States to assist FEMA communities to comply with NFIP floodplain management requirements (Community Assistance Program)	FEMA	http://www.fema.gov/national-flood-insurance-program	X		
National Dam Safety Program	Technical assistance, training, and grants to help improve State dam safety programs	FEMA	http://www.fema.gov/about-national-dam-safety-program	X	X	
Hazard Mitigation Assistance (HMA)	Grants to provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages – includes FMA, HMGP, PDM (below)	FEMA	http://www.fema.gov/hazard-mitigation-assistance		X	X



Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Flood Mitigation Assistance (FMA) Program	Grants to States and communities for pre-disaster mitigation planning and projects to help reduce or eliminate the long-term risk of flood damage to structures insurable under the National Flood Insurance Program	FEMA	http://www.fema.gov/flood-mitigation-assistance-program		X	X
Hazard Mitigation Grant Program (HMGP)	Grants to States and communities for planning and projects providing long-term hazard mitigation measures following a major disaster declaration	FEMA	http://www.fema.gov/hazard-mitigation-grant-program		X	X
Pre-Disaster Mitigation (PDM) Competitive Grant Program	Grants to States and communities for planning and projects that provide long-term hazard pre-disaster mitigation measures	FEMA	http://www.fema.gov/pre-disaster-mitigation-grant-program		X	X
Public Assistance: Hazard Mitigation Funding Under Section 406	Hazard mitigation discretionary funding available under Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act following a Presidentially declared disaster	FEMA	http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit/hazard-mitigation-funding-under-section-406-0			X
Partners for Fish and Wildlife	Financial and technical assistance to private landowners interested in pursuing restoration projects affecting wetlands and riparian habitats	US Fish and Wildlife Service	http://www.fws.gov/partners		X	X
National Trust Preservation Funds (NTPF)	Funding awarded to nonprofit organizations and public agencies for planning and education projects	National Trust for Historic Preservation	http://www.preservationnation.org		X	



Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Historic Preservation Financial Assistance – General	Federal financial assistance specifically for historic preservation	Advisory Council on Historic Preservation	http://www.achp.gov/funding-general.html		X	X
FHWA Emergency Relief Program	Fund for the repair or reconstruction of Federal-aid highways that have suffered serious damage as a result of (1) natural disasters or (2) catastrophic failures from an external cause	U.S. Department of Transportation (DOT)	http://www.fhwa.dot.gov/programadmin/erelief.cfm			X
Transportation Investment Generating Economic Recovery (TIGER)	Investing in critical road, rail, transit and port projects across the nation	DOT	http://www.dot.gov/tiger		X	X
American Recovery and Reinvestment Act of 2009	Invest in transportation, environmental protection, and other infrastructure that will provide longer term economic benefits	DOT	http://www.dot.gov		X	X
National Institute of Food and Agriculture's Disaster Resilience for Rural Communities Grant Program	Advance basic research in engineering and in the social, behavioral, and economic sciences to enhance disaster resilience in rural communities	United States Department of Agriculture (USDA)	http://www.usda.gov/wps/portal/usda/usdahome		X	
Emergency Loan Program	USDA's Farm Service Agency (FSA) provides emergency loans to help producers recover from production and physical losses due to drought, flooding, other natural disasters or quarantine	USDA	http://www.usda.gov/wps/portal/usda/usdahome			X



Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Emergency Watershed Protection (EWP) program	Provide assistance to relieve imminent hazards to life and property caused by floods, fires, drought, windstorms, and other natural occurrences	Natural Resources Conservation Service (NRCS)	http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/ewp/		X	X
Financial Assistance	Financial assistance to help plan and implement conservation practices that address natural resource concerns or opportunities to help save energy, improve soil, water, plant, air, animal and related resources on agricultural lands and non-industrial private forest land	NRCS	http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial		X	X
Homeland Security Grant Program (HSGP)	Prevent, protect against, mitigate, respond to, and recover from acts of terrorism and other threats.	Department of Homeland Security (DHS)	http://www.dhs.gov/news/2013/08/23/dhs-announces-grant-allocation-fiscal-year-fy-2013-preparedness-grants		X	X
Urban Areas Security Initiative (UASI)	Enhance regional preparedness and capabilities in 25 high-threat, high-density areas	DHS	http://www.dhs.gov		X	X
Operation Stonegarden (OPSG)	Enhance cooperation and coordination among local, tribal, territorial, state, and Federal law enforcement agencies to jointly enhance security along the United States land and water borders	DHS	http://www.dhs.gov		X	X
Emergency Management Performance Grants (EMPG) Program	Assist local, tribal, territorial, and state governments in enhancing and sustaining all-hazards emergency management capabilities	DHS	http://www.dhs.gov - OR - http://www.fema.gov/fy-2013-emergency-management-performance-grants-empg-program-0		X	X



Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
FY 2012 Disaster Relief Opportunity	Help communities and regions devise and implement long-term economic redevelopment strategies through a variety of construction and non-construction projects	Economic Development Administration (EDA)	http://www.eda.gov/disasterrecovery.htm		X	X
Solicitation of Project Proposals for Innovative Safety, Resiliency, and All-Hazards Emergency Response and Recovery Research Demonstrations	Research, Development, Demonstration, and Deployment Program funds for innovative safety, resiliency, and all-hazards emergency response and recovery research demonstration projects of national significance.	Federal Transit Administration (FTA)	http://www.fta.dot.gov/grants/13077_15698.html		X	X
Land & Water Conservation Fund	Matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities (as well as funding for shared federal land acquisition and conservation strategies)	National Park Services	http://www.nps.gov/lwcf/		X	X
Missions & Appropriations	Budget and funding to support missions including research, feasibility studies, construction, and disaster relief (e.g., Disaster Relief Appropriations Act of 2013)	U.S. Army Corps of Engineers (USACE)	http://www.usace.army.mil Buffalo District: http://www.lrb.usace.army.mil New York District: http://www.nan.usace.army.mil	X	X	X



Federal						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
State Water Resources Research Institute Program	National competitive grants to support research on the topic of improving and enhancing the nation's water supply, including evaluation of innovative approaches to water treatment, infrastructure design, retrofitting, maintenance, management, and replacement; evaluation of the dynamics of extreme hydrological events and associated costs; development of methods for better estimation of the physical and economic supply of water	U.S. Geological Survey (USGS)	http://www.usgs.gov		X	
Sea Grant	National competitive funding opportunities in the areas of research and development, education, extension and outreach to respond to high priority issues and opportunities (e.g., climate, aquaculture)	National Oceanic and Atmospheric Administration (NOAA)	http://seagrant.noaa.gov		X	X
State						
New York State Grant Opportunities	Centralized listing of funding programs & grant opportunities	New York State	http://www.nysegov.com/citGuide.cfm?superCat=102&cat=410&content=main	X	X	X
DHSES Grant Programs	Centralized listing of various Homeland Security grants	New York State Department of Homeland Security & Emergency Services (DHSES)	http://www.dhSES.ny.gov/grants		X	X



State						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Grant & Bid Opportunities	Grant, bid, and funding opportunities including local waterfront revitalization and watershed protection	NYS Department of State (NYSDOS)	http://www.dos.ny.gov/funding		X	X
Local Government Records Management Improvement Fund (LGRMIF) Disaster Recovery Grants	Grants for disaster recovery projects related to damage caused by a sudden, unexpected event involving fire, water, man-made or natural phenomena where a timely response is necessary to prevent the irretrievable loss of vital or archival records, or to ensure reasonable, timely access to vital records	New York State Archives / New York State Education Department	http://www.archives.nysed.gov/a/grants/grants_lgrmif.shtml		X	X
The New York State Emergency Services Revolving Loan	Repair of firefighting apparatus, ambulances, or rescue vehicles; Renovation, rehabilitation, or repair of facilities that house firefighting equipment, ambulances, rescue vehicles, and related equipment	New York State Division of Homeland Security and Emergency Services (DHSES)	http://www.dhSES.ny.gov/ofpc/services/loan/			X
NY Rising Community Reconstruction Program	Provide additional rebuilding and revitalization assistance to communities severely damaged by Hurricanes Sandy and Irene and Tropical Storm Lee	New York State Housing Trust Fund Corporation (HTFC)	http://stormrecovery.ny.gov/community-reconstruction-program			X



State						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Environmental Protection Fund (EPF)	Matching grants for the acquisition, planning, development, and improvement of parks, historic properties	New York State Parks, Recreation & Historic Preservation (NYSOPRHP)	http://www.nysparks.com/grants			X
Recreational Trails (RTP) Program	Matching grants for the acquisition, development, rehabilitation and maintenance of trails and trail-related projects	NYSOPRHP	http://www.nysparks.com/grants			X



State						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
New York State Disaster Homeownership Repair and Rebuilding Fund	Providing new funding for qualified homeowners whose property was damaged or destroyed by Hurricane Sandy	New York State	http://scoem.suffolkcountyny.gov/OEM/DisasterHomeownershipRepairandRebuildingFund.aspx#.UnPOUvkqjbk			X
Energy-Related Funding Opportunities	Funding available to private or institutional entities submitting project plans to address NYSERDA's broad energy and environmental challenges	New York State Research & Development Authority (NYSERDA)	http://www.nyserda.ny.gov/Funding-Opportunities.aspx		X	X
Environmental Protection & Improvement Grants	Competitive grants for environmental protection and improvement; available for municipalities, community organizations, not-for-profit organizations and others	New York State Department of Environmental Conservation	http://www.dec.ny.gov/pubs/grants.html		X	X



Non-Profit Organizations – NGO's						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
Foundation Center	Online tool to assist in finding funders, help with proposal writing, and information on private philanthropy in the United States	Foundation Center	http://foundationcenter.org		X	X
Western New York Grantmakers Association	Partnership with local libraries to provide grantseeking resource for nonprofits and consultants, updated weekly with interactive maps and charts showing foundations' giving priorities	Western New York Grantmakers Association	http://www.wnygrantmakers.org		X	X
American Red Cross	Shelter, food, support, supplies, and direct assistance to populations impacted by disaster	American Red Cross	http://www.redcross.org		X	X
Rockefeller Foundation	Grants to support initiatives that meet their goals of revaluing ecosystems, advancing health, securing livelihoods, and transforming cities (includes resiliency)	Rockefeller Foundation	http://www.rockefellerfoundation.org/grants		X	X
Philanthropy New York	Association of NY/NJ grant makers; main area of interest for grant seekers is their list of funders accepting the Association's common application	Philanthropy New York	http://www.philanthropynewyork.org/s_nyrag/doc.asp?CID=5494&DID=14857			X
The Nature Conservancy	Conservation organization partnering with communities, business, government, and other non-profits to protect ecologically important lands and waters for nature and people	The Nature Conservancy	http://www.nature.org		X	X



Non-Profit Organizations – NGO's						
Program	Description	Lead Agency	Link	Regulatory	Technical	Financial
The Trust for Public Land	Assistance to state and local governments including land conservation transactions, conservation finance, park design & development	The Trust for Public Land	http://www.tpl.org/services/conservation-finance		X	X
New York Land Protection Program & Conservation Finance Program	Direct acquisition and conservation easements; grants and short-term, low-cost bridge loans for land transactions in selected landscapes in the eastern United States	Open Space Institute	http://www.osiny.org/site/PageServer?pagename=Program_CFP		X	X
Public Health Programs	Provides funding, expertise, information, leadership and/or connections to specific groups of people for projects addressing priority public health challenges	CDC Foundation	http://www.cdcfoundation.org		X	X
The Breezy Point Disaster Relief Fund	To aid Breezy Point community members in the greatest financial need in the wake of Hurricane Sandy	The Breezy Point Disaster Relief Fund, Inc.	http://breezypointdisasterrelief.org			X

