



Section 5: Mitigation Strategy

As mentioned elsewhere, during the 2016 Plan Update portions of the original HMP were preserved, including some of the terms and language. This Section includes some elements from the original 2010 version of the Plan.

5.1 Mitigation Goal and Objectives

This section contains goals, objectives, and action items for the Middlesex County New Jersey Multi-Jurisdictional Hazard Mitigation Plan. For the purposes of this Plan, the following definitions are proposed:

Goals are general guidelines that explain what the county and participating municipalities want to achieve. Goals are expressed as broad policy statements representing desired long-term results.

Objectives (or strategies) describe strategies to attain an identified goal. Objectives are more specific statements than goals; objectives are also usually measurable and can have a defined completion date.

Mitigation Actions are the specific steps (projects, policies, and programs) that advance a given objective. They are highly focused, specific, and measurable.

The hazard identification and risk assessment in Sections 5 consisted of identifying the hazards that affect Middlesex County and the potential for damage to community assets that are vulnerable to the hazards. As required by the planning process, the original working group developed four mitigation goals in 2010. The four goals (and supporting objectives) from the 2010 Plan were discussed and reviewed at the second HMPSC meeting held on July 26, 2014. The goals from the 2010 version were circulated to the HMPSC for comment. After careful analysis, the Steering Committee determined that the original goals (and objectives) from the 2010 Plan were appropriate to include in the 2016 update.

5.1.1 Goals

The broad goals of the 2016 Middlesex County Hazard Mitigation Plan update are as follows:

Goal 1: Improve **EDUCATION AND OUTREACH** efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact

Goal 2: Improve **DATA COLLECTION, USE, AND SHARING** to reduce the impact of hazards

Goal 3: Improve **CAPABILITIES, COORDINATION, AND OPPORTUNITIES** at municipal and county levels to plan and implement hazard mitigation projects, programs, and activities

Goal 4: Pursue **OPPORTUNITIES TO MITIGATE** repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities



5.1.2 Objectives

Objectives are well-defined intermediate points in the process of achieving goals. The objectives are linked to the goals by including the goal number prior to describing the objective. For example Objective 1.A is associated with Goal 1. Specific actions to support these goals are described in Table 5-1. Additionally, actions related to enhanced data collection (flood and critical facilities excepted) are described in Table 5-2. Municipality-specific actions are described in each municipality appendix (Appendices 1 – 25). Middlesex County mitigation planning objectives include:

Objective 1.A: Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials

Objective 1.B: Increase local government official awareness regarding funding opportunities for mitigation.

Objective 1.C: Increase local government official awareness regarding opportunities for participation in and contributing to future Plan updates.

Objective 2.A: Improve availability of the county and participating municipalities to collect data related to all relevant hazards for use in future planning efforts.

Objective 2.B: Provide government officials and local practitioners with educational opportunities and information regarding best practices for hazard mitigation planning, project identification, and implementation

Objective 2.C: Acquire and maintain detailed data regarding critical facilities such that these sites can be prioritized and risk-assessed for possible mitigation actions

Objective 3.A: Continue support of hazard mitigation planning, project identification, and implementation at the municipal and county level.

Objective 3.B: Support increased NFIP/CRS participation

Objective 3.C: Support increased integration of municipal/county hazard mitigation planning and floodplain management with effective municipal/ county zoning regulation, subdivision regulation, and comprehensive planning.

Objective 3.D: Elicit and support efforts to address shortcomings in existing laws, programs, and administrative rules related to hazard mitigation.

Objective 3.E: Provide for user-friendly hazard-data accessibility for mitigation and other planning efforts and for private citizens

Objective 3.F: Provide direct support, where possible, to municipal mitigation programs.

Objective 3.G: Provide opportunities for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the plan update process

Objective 4.A: Facilitate development and timely submittal of project applications meeting state and federal guidelines for funding (1) for RL and SRL properties and (2) for hardening / retrofitting infrastructure and critical facilities with highest vulnerability ratings.

Objective 4.B: Maintain and enhance local planning and regulatory standards related to future development and investments.



5.2 Mitigation Action Strategies

5.2.1 Potential Mitigation Actions

Middlesex County has identified several hazard mitigation actions that would benefit the county. These were identified in the HMPSC meetings, which included input from representatives of governmental organizations, local businesses, and private citizens. This was based in part on consideration of the range of potential mitigation actions for hazards faced by Middlesex County and its constituent municipalities which are described below.

Public Awareness

Insurance industry and emergency management research has demonstrated that awareness of hazards is not enough. People must know how to prepare for, respond to, and take preventive measures against threats from natural hazards. This research has also shown that a properly run local information program is more effective than national advertising or public campaigns.

Although concerted local, county, and statewide efforts to inform the public exist, lives and property continue to be threatened when segments of the population remain uninformed or chose to ignore the information available. Public education serves to assist the communities with problems experienced from floods, hurricanes, tornadoes and thunderstorms/lightning/high winds as well as other lower priority hazards.

Educating the public of these life and property saving techniques must remain a high priority item at the local, state, and federal level and is consistent with Goal 1.

Projects identified by the HMPSC are as follows:

- Develop *All Hazards* public education and outreach program for hazard mitigation and preparedness.
- Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL, and RFC, with a focus on those aspects available to private firms and property owners.
- Host a Hazard Awareness Week on an annual basis.
- Distribute information regarding flood and high wind hazards and potential mitigation actions in flood-prone areas.
- Conduct a Repetitive Loss Outreach Program (see discussion under “National Flood Insurance Program / Community Rating System” below).

Flood Mitigation Actions

Retrofitting structures prone to periodic flooding is an effective mitigation technique to reduce the flood loss of property and is consistent with Goal 4. Techniques include the elevation of structures, acquisition, mitigation reconstruction, dry flood proofing, wet flood proofing, and drainage improvements and installation of generators.



Elevation: Involves raising a structure on a new foundation so that the lowest floor is above the Base Flood Elevation (BFE). Almost any type and size of structure can be elevated.

Acquisition of structures: or "buyout" option is the most effective mitigation technique to reduce the loss of property due to flooding. The owners of repetitive flood loss structures sell their structure to the community on a cost share basis for the fair market value of the structure prior to the last flood event. The structure is demolished and removed with a deed restriction placed on the property for perpetuity, thus eliminating the structure from future flood damage. This approach is most effective when flood prone structures located within the same vicinity are grouped together and acquired. The remaining property can be converted into usable recreational space with minor structure restrictions.

Mitigation Reconstruction: is a component of the Severe Repetitive Loss (SRL) grant program that allows demolition and reconstruction of structures when traditional elevation cannot be implemented. This activity can be used for structures that were substantially damaged or destroyed. Currently this is a pilot program utilized mainly on the gulf coast but can be considered a potential approach to mitigation activities.

Dry flood proofing: techniques include the building of floodwalls adjacent to existing walls, the installation of special doors to seal out floodwaters, and special backflow valves for water and sewer lines. Wet flood proofing includes low cost mitigation measures such as raising air conditioners, heat pumps, and hot water heaters on platforms above the BFE.

Wet flood proofing: includes measures applied to a structure that prevent or provide resistance to damage from flooding while allowing floodwaters to enter the structure or area. Generally, this includes properly anchoring the structure, using flood resistant materials below the BFE, protection of mechanical and utility equipment, and use of openings or breakaway walls.

Application of wet flood proofing as a flood protection technique under the NFIP is limited to enclosures below elevated residential and non-residential structures and to accessory and agricultural structures that have been issued variances by the community.

Drainage: Improving the drainage capacity around roads and low-lying areas is a time-tested technique to mitigate flood damage. Maintenance of drainage canals and laterals is essential to maximize their efficiency and continued long term effectiveness. Actions in general to reduce the effects of flooding are widening and deepening the earthen canals, cleaning of existing ditches, and replacing existing culverts, upgrading pumps, and installing check valves and inverts in certain culverts. Maintaining and improving drainage serves to assist the communities with problems experienced from floods, hurricanes, tornadoes and thunderstorms/lightning/high winds.

Generators: Another cost effective retrofitting technique includes the installation of generators. By providing power with generators during and after severe storms many critical facilities may continue to provide necessary services to the community. The installation of generators serves to assist the communities with problems experienced from floods, hurricanes, tornadoes and



thunderstorms/lightning/high winds.

Wind Retrofitting Mitigation Actions

Structures can be retrofitted to withstand high winds by installing hurricane shutters, roof tie-downs and other storm protection features. The exterior integrity is maintained by protecting the interior of the structure and providing stability against wind hazards associated with hurricanes. These types of measures can be relatively inexpensive and simple to put in place.

Another retrofitting technique is to bury electric power lines to avoid tree limbs falling on them or from wind damage resulting in a break in service to the consumer. Burying electric power lines serves to assist the communities with problems experienced from floods, hurricanes, tornadoes and thunderstorms / lightning / high winds.

Early Warning Systems

With sufficient warning of a flood, a community and its residents can take protective measures such as moving personal property, cars, and people out of harm's way. When a flood threat recognition system is combined with an emergency response plan that addresses the community's flood problems, considerable flood damage can be prevented. This system must be coupled to warning the general public, carrying out appropriate tasks, and coordinating the flood response plan with operators of critical facilities. A comprehensive education and outreach program is critical to the success of early warning systems so that the general public, operators of critical facilities, and emergency response personnel will know what actions to take when warning is disseminated.

Within Middlesex County's Emergency Operations Plan a Public Alert System is detailed. The activation of this system and timely release of emergency information to the public by all available media is vitally important.

Middlesex County would like to improve its public notification system to alert citizens of the county regarding the possibility of impending flooding caused by hurricanes, tropical storms, and heavy rains resulting from prolonged thunderstorms. A warning period is available for most emergency situations, although the amount of lead time may vary from hazard to hazard. Proper use of this warning period will save lives, reduce injuries, and protect property.

Early warning systems serve to assist the communities with problems experienced from floods, hurricanes, tornadoes and thunderstorms / lightning / high winds as well as other lower priority hazards.

Earthquakes

Significant seismic events, while not common to the region, do pose a potentially significant threat to Middlesex County and the surrounding area. The most practical preventative actions to be considered concerns appropriate building code enforcement. While this is not necessarily practical for existing structures except for renovations or reconstruction, there are activities that can be taken to mitigate further exposure to risk.



Building Retrofit: the use of reinforced concrete materials in combination with cross ties is a proven technique to provide current structures with additional stabilization. The addition of seismic stabilizer platforms for important of critical mechanicals within buildings will significantly reduce adverse impacts.

Hazardous Material Release – Fixed facilities

Within the confines of the county exists a significant density of hazardous materials manufacturing facilities or facilities that utilize these materials on a daily basis. Some effect protective and mitigating measures are:

Educational Outreach: develop and conduct educational outreach programs on the associated risks that close proximity to these facilities presents. The development of personalized family or business disaster plans in the event of release. These should be developed and conducted in partnership with the business community.

Evacuation Planning: This includes pre-identifying emergency evacuation routes and communicating that information to the public. In addition, people needing assistance, such as the elderly or those with special needs, should be identified and plans made to assist them if an evacuation were to occur.

Another component of evacuation planning is ensuring that shelter facilities will be available. Potential shelter locations must be identified and publicized and efforts must be made to ensure that the proper supplies and staff are available if the shelter is activated.

Hazardous Material Release – Transportation

While there are few hard and fast direct measures that may be taken, several that are available can be very effective.

Codes & Standards: Ensure that adequate training and enforcement of rules, regulations and standards for intermodal transportation carries are being carried out within the appropriate industries. This should include some public outreach as well.

Coordination of Hazard Expositions combined with demonstration exhibits dealing with a cross range of these potential hazards incorporating the business community and the public can be effective at reducing fears and concerns.

5.2.2 Public Awareness

Insurance industry and emergency management research has demonstrated that awareness of hazards is not enough. People must know how to prepare for, respond to, and take preventive measures against threats from natural hazards. This research has also shown that a properly run local information program is more effective than national advertising or public campaigns.

Although concerted local, county, and statewide efforts to inform the public exist, lives and property continue to be threatened when segments of the population remain uninformed or chose to ignore the



information available. Public education serves to assist the communities with problems experienced from flood, high wind—straight-line winds, earthquake/geological, dam failure, hazardous material releases—fixed sites, severe storm—winter weather, and high wind—tornados as well as other lower priority hazards. Educating the public of these life and property saving techniques must remain a high priority item at the local, state, and federal level and is consistent with Goal 1.

Projects identified by the HMPSC are as follows:

1. Develop *All Hazards* public education and outreach program for hazard mitigation and preparedness
2. Initiate a public awareness program on local TV for hazard safety
3. Conduct evacuation exercises with and for local Office of Emergency Management (OEM) personnel and private citizens
4. Conduct yearly workshops related to FEMA hazard mitigation grant programs, including Flood Mitigation Assistance (FMA) grant program, Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) grant program, Severe Repetitive Loss (SRL) grant program, and Repetitive Flood Claims (RFC) grants program, with a focus on those aspects available to private firms and property owners (coordinated with Action 1.B.1, below)
5. Educate the public through New Jersey Office of Emergency Management (NJOEM) and New Jersey Forest Fire Service outreach programs and hazard mitigation workshops



5.2.3 Prioritized Mitigation Action Items

For the original (2010) version of the HMP, the County used a process known by the abbreviation STAPLEE to assign priorities to the range of mitigation activities that were included in the Plan. See Appendix G, *STAPLEE Analysis of Mitigation Actions* in the 2010 HMP for additional details about how the County carried out this process.

The 2016 HMPSC reviewed the STAPLEE process used for the 2010 Plan and determined that the process is needlessly complicated, and would not be used for the 2016 update. As discussed below, the Committee prioritized the actions using a simple high/medium/low scale based on the following criteria, on a scale of 1-3. Each action in the table below was assigned a score of 1, 2, or 3 during a meeting of the HMPSC, based on the 4 categories listed below. The scores were then averaged and the result was the basis of the prioritization.

1. Effectiveness in reducing damages
2. Feasibility
3. Availability of funding
4. Support by community leadership

To update the original mitigation actions, the action tables from the 2010 HMP were distributed to the HMPSC, and members were requested to update and provide comments. The updates and comments were then integrated into the Action Tables. Each action item identifies a point of contact, the cost effectiveness of the project, a schedule for completion, and suggested funding sources. As part of the 2016 Plan update, the mitigation actions items from the original Plan were updated to reflect Middlesex County's current priorities for specific activities to achieve the goals discussed in Section 5.1.1.

5.2.4 Countywide Mitigation Actions

As part of the original Plan, the 2010 HMPSC developed the following program of county-wide mitigation actions in response to the risk assessments included in the original Plan. As part of the 2016 Plan update, the HMPSC reviewed and updated the mitigation actions table (Table 5- 1). The HMPSC discussed each action item with the lead office, and the tables were modified to include the status for each item. The status identifies work that has been completed to satisfy the action, or progress made as of December 2015. The actions are divided into two tables. The actions from the original Plan are included in Table 5-1.

Completed actions are noted in the status column (and shaded light gray). In addition, actions that are no longer valid are identified with ~~strikethrough~~ text to indicate these are no longer actions considered by the HMPSC. New actions identified as part of the 2016 Plan update are included in Table 5-2. All mitigation action items pertain to both current and future development as well as infrastructure, as applicable, within Middlesex County. Note that action items identified for each jurisdiction can be found in the individual municipalities appendices (Appendices 1 – 25).



**Table 5-1:
Middlesex County Hazard Mitigation Goals, Objectives, and General Actions**

GOAL 1: Improve EDUCATION AND OUTREACH efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
Objective 1.A: Increase awareness of risks and understanding of the advantages of mitigation by the general public and local government officials (see also municipal actions in Table 9.3.2-1)	1.A.1: Develop “All Hazards” public education and outreach program for hazard mitigation and preparedness through NJOEM and NJFS outreach	Medium	County and municipal OEM, NJOEM NJFS	1 year	Middlesex County and municipal OEM personnel and existing state resources	Better informed populace creates a greater willingness and expectation to participate in mitigation actions.	Spoke at 21 towns about hazard mitigation in 2011. Held public workshops in April and June 2015 on resiliency and mitigation options.
	1.A.2: Initiate a public awareness program on local TV channel for hazard safety	Medium	County and municipal OEM	6 months to 1 year	Middlesex and municipal OEM personnel, local public TV	A better informed and involved population reduces risk and loss.	Working with towns that have channels to develop programming.
	1.A.3: Conduct evacuation exercises with and for local OEM personnel and private citizens	High	MCOEM	1 year	Middlesex and municipal OEM personnel, local business groups, citizen groups	Public participation lends to a more active emergency and preparedness response.	Performed evacuation exercises with long-term care facilities in County.



GOAL 1: Improve EDUCATION AND OUTREACH efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	1.A.4: Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL , and RFC, with a focus on those aspects available to private firms and property owners (coordinated with Action 1.B.1, below).	High	MCOEM, NJOEM	Ongoing	Existing state assets and federal grants	Making local officials and the public aware of federal grants increases participation.	Worked with Congressman Pallone to execute workshop on SAFER grants. Interested in future opportunities as resources allow.



GOAL 1: Improve EDUCATION AND OUTREACH efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
Objective 1.B: Increase local government official awareness regarding funding opportunities for mitigation	1.B.1: Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL, and RFC (coordinate with Action 1.A.4, above)	High	MCOEM, NJOEM	Ongoing	Existing state assets and federal grants	Making local officials aware of federal grants increases participation.	This project was repeated in the 2010 plan for emphasis of it application to multiple objectives. In the interest of readability, the duplication is being removed for this plan update.



GOAL 1: Improve EDUCATION AND OUTREACH efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
Objective 1.C: Increase local government official awareness regarding opportunities for participation in and contributing to future Plan updates.	1.C.1: Reach out to municipal Floodplain Administrators, depts. of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes.	High	MCOEM, municipal coordinators	Ongoing	Existing county and municipal resources	Makes local officials aware of benefits of plan participation.	Completed as part of planning process.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
Objective 2.A: Improve data availability to the county and participating communities for use in future planning efforts	2.A.1: Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment, e.g., incorporate information re: implementation of Risk MAP initiative as source of improved information re: flood risk in participating municipalities.	High	MCOEM, Rutgers University, NJGS, NOAA and USACE	Ongoing	Existing county staff, FEMA, NJOEM, Rutgers University, NJGS, other federal agencies including NOAA and USACE	Provides the basis for making decisions about where to focus mitigation activities, including further study, and eventually mitigation projects.	Works with Rutgers on technical assistance for risk assessments.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
Objective 2.A, cont.:	2.A.2: Work with ongoing county, state, and federal efforts to develop and maintain hazard-specific geospatial data necessary to perform full risk assessments for all relevant hazards in Middlesex County	High	MCOEM	Ongoing	Existing county staff, FEMA, NJOEM, Rutgers University, NJGS, other federal agencies including NOAA and USACE	Essential step in developing mitigation actions.	This has been a continued effort.
	2.A.3: Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories (see also municipal actions in Table 9.3.3-1 for additional detail).	Medium	MCOEM	Starting within six months, then ongoing	County OEM staff, municipal staff	Essential step in developing mitigation actions.	Performed Matchaponix Flood Study.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.4: Undertake detailed vulnerability assessments and develop mitigation options for critical facilities in V and VE zones.	High	County and municipal OEM	3-years	Existing staff	Step in process of securing grant funds to mitigate risks to these sites.	This is performed as part of the HMP process and the GTR studies.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
Objective 2.A, cont.	2.A.5: Continuously update repetitive loss and severe repetitive loss lists from the NFIP.	Medium	County and municipal OEMs	Ongoing	Existing staff	Essential to continuing the county's efforts to reduce flood losses. Enables the county to appropriately prioritize its actions to mitigate repetitive loss and severe repetitive loss properties, in accordance with FEMA requirements (and potentially qualifies the county and local jurisdictions for the 90:10 federal-local match under the SRL program).	This is a continued effort.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.6: Inventory critical facilities to identify those in geographic areas that may be prone to high ground motion during earthquakes (due to proximity to faults or to soil characteristics), and those with structures that may be at risk during an earthquake.	High	MCOEM and municipal OEMs, with support from NJGS.	1-year	FEMA grants, existing staff and resources	Allows risk-based decisions regarding protection of critical facilities.	The County is redirecting its priorities towards hazards of higher concern.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
Objective 2.A, cont.	2.A.7: Coordinate with state efforts to inventory or survey of prioritized areas to determine if there is a need for additional study or data collection related to wildfire and/or urban-interface fires. Focus of inventory/study will be on identifying areas where there exist vulnerable populations or built environment and/or areas where fuel loads and other conditions suggest potential for wildfire risk.	High	MCOEM, municipal OEMs, New Jersey Forest Fire Service, NJOEM	Ongoing	Existing resources and staff	Establishes basis for additional studies and eventually mitigation actions, if they are indicated.	The County will continue to work with the State and NJFS. The most recent data was incorporated into this plan update.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.8: Undertake a survey of critical facilities to identify and prioritize those that may have structural characteristics that make them vulnerable to excessive snow and ice loads.	Medium	MCOEM, municipal OEMs,	Ongoing	Existing resources and staff	Basis for prioritizing actions, including mitigation.	Completed as part of a regional project to look at shelters. There have been no incidents of excessive loads on critical facilities to date.
	2.A.9: Coordinate with state efforts to maintain current information about fuel loads and conditions that may affect potential for fires.	High	MCOEM, municipal OEMs, New Jersey Forest Fire Service	Ongoing	Existing resources and staff	Provides a basis for risk assessment.	Worked with State as needed.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
<p>Objective 2.A, cont.</p>	<p>2.A.10 Complete a detailed analysis of past losses related to nor'easters and other storms to determine if additional study is indicated. Work with State and federal agencies to develop a detailed characterization of erosion history and risks in particular.</p>	<p>High</p>	<p>MCOEM and Municipal OEM's with critical facilities; NJ State Climatologist</p>	<p>Ongoing</p>	<p>Existing resources and staff</p>	<p>Basis for determining if any additional study is warranted; data can be used as part of next plan update.</p>	<p>This has not been completed due to lack of resources, it is still a priority for coastal towns.</p>



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.11: Use best possible flood data, including DFIRM and Map Mod data, if available, in next plan update. Track implementation of Risk MAP initiative to ensure Middlesex County and municipalities gain full advantage of opportunities under this program.	High	Middlesex County and municipal OEMs	3 years	Existing staff	This is essential data for establishing flood risk.	This was completed as part of this plan update.
	2.A.12: Maintain effective coordination and information sharing related to hazardous material sites with NJOEM and the Right to Know (RTK) Network.	Medium	MCOEM, RTK Network, NJOEM	Ongoing	Existing resources and staff	Provides a basis for prioritizing potential hazmat sites for further study and potential responses.	Ongoing effort to work with State on existing and new risks.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.13: Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.	High	MCOEM, county agencies	Ongoing	Existing resources and staff	Provides a basis for prioritizing potential hazmat sites for further study and potential responses.	Working with State to secure relevant data on Bakken Crude.
	2.A.14: Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics	Medium	MCOEM, county agencies, RTK Network, NJDEP, US Environmental Protection Agency (EPA)	Ongoing	Existing resources and staff	Potentially allows integration of hazardous materials information with data related to natural hazards.	This is ongoing as risks change.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.15: Complete a detailed analysis of past losses related to winter storms to determine if additional study is indicated.	High Low	Middlesex County and local agencies with critical facilities	2 years	Existing resources and staff	Provides a basis for determining if any additional study is warranted; data can be used as part of next plan update.	This has not been done due to a lack of resources. The County has dropped the priority to "Low"



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.16: Complete a detailed analysis of past losses related to nor'easters and other coastal storms to determine if additional study is indicated. Work with state and federal agencies to develop a detailed characterization of erosion history and risks in particular.	High	Middlesex County and local agencies with critical facilities; New Jersey State Climatologist	3 years	TBD	Provides a basis for determining if any additional study is warranted; data can be used as part of next plan update.	See 2.A.10
	2.A.17: Work with appropriate agencies to identify specific areas that are vulnerable to storm effects, then inventory assets and populations in these areas as the basis for a risk calculation.	High	MCOEM, NOAA, USACE, local officials, NJDEP	3 years	TBD	Provides a basis for determining if any further risk assessment action is warranted.	Performed as part of HMP process.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.18: Work with NJDEP to more fully understand the dam hazard rankings and methodology behind them, particular regarding high-hazard sites.	High	MCOEM, NJDEP	3 years	NJDEP, USGS, NRCS	Provides a basis for further development and prioritization any future actions or strategies.	NJDEP Dam Safety gave training to County and local coordinators on dam hazards and methodology.
	2.A.19: Undertake more detailed engineering studies of dams that may pose risks to the county, based on additional data collected from state or federal agencies.	High	MCOEM, NJDEP, NJOEM	Ongoing	NJDEP, USGS, NRCS	Provides a basis for any additional work on risk assessment, or on specific mitigation actions, including modifications to structures, evacuation plans, or public information.	County owned dams were recently studied and emergency action plans were updated and submitted.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.A.20: Consolidate and incorporate relevant local data related to hazards, extent, probability, exposure, risk, history, etc.	High	Municipal OEMs	Ongoing	Existing resources	Basis for hazard identification, risk assessment, and mitigation strategies	Included as part of this plan update.
Objective 2.B: Provide government officials and local practitioners with educational opportunities and information regarding best practices for hazard mitigation planning, project identification and implementation	2.B.1: Participate in the Emergency Preparedness Conference with workshops.	High	NJOEM NJFS	Ongoing	Existing state resources	The Emergency Preparedness Conference is an important venue to promote and increase participation in hazard mitigation programs and reaches a wide variety of people and interests.	County participates annually.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards							
Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
<p>Objective 2.C: Acquire and maintain detailed data regarding critical facilities such that these sites can be prioritized and risk-assessed for possible mitigation actions</p>	<p>2.C.1: Develop a database inventory of critical facilities countywide (county-, local-, and privately-owned), including fire and police stations, medical facilities, major public buildings important for emergency response and recovery, and critical lifeline transportation and utility nodes such as bridges, water treatment plants, wastewater treatment plants, high voltage electric substations, and hazardous materials facilities.</p>	High	MCOEM, municipal OEMs	Ongoing	Existing staff, possibly consultants depending on funding availability.	Developing basic information such as this will allow the State to meet federal requirements for prioritizing mitigation grant funds that will be directed to reducing losses to critical facilities.	This is an ongoing effort. County has worked with municipalities and stakeholders to identify facilities and infrastructure.



GOAL 2: Improve DATA COLLECTION, USE, AND SHARING to reduce the impact of hazards

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	Status
	2.C.2: Prioritize critical facilities and complete Phase 1 site surveys to identify vulnerabilities.	High	MCOEM, municipal OEMs	Commencing immediately, then ongoing.	Existing staff, possibly consultants depending on funding availability.	Essential first step in understanding risks and developing mitigation actions.	State performs these assessments as necessary.



GOAL 3: Improve **CAPABILITIES, COORDINATION, AND OPPORTUNITIES** at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
Objective 3.A: Continue support of hazard mitigation planning, project identification and implementation at the municipal and County level	3.A.1: Continue working with the State, as well as local jurisdictions to encourage their cooperation in making RL (and SRL) property mitigation a high priority, and to offer technical support in carrying out the requirements of FEMA mitigation programs	High	County OEM	Ongoing	Existing staff	Basic requirement to initiate and sustain program momentum.	Ongoing; has provided assistance to towns as needed in acquisitions. See action below related to FMA acquisition project.



GOAL 3: Improve CAPABILITIES, COORDINATION, AND OPPORTUNITIES at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	3.A.2: Provide grants information, planning tools, training and technical assistance to increase the number of public and private sector hazard mitigation projects.	High	Middlesex OEM, NJOEM, FEMA RII	Ongoing	Existing Resources, Mitigation Grant	Expanding the number of hazard mitigation projects will improve the county's resistance to hazards and reduce the impact of hazard events on its municipalities.	This is an ongoing effort. MCOEM provides information at coordinator meetings.
	3.A.3: Conduct direct outreach and education to municipal OEMs and other potential participants in Plan maintenance and future Plan updates	High	MCOEM	Ongoing	Existing resources	Increases efficacy and participation in hazard mitigation planning	Completed as part of plan adoption and maintenance process.



GOAL 3: Improve CAPABILITIES, COORDINATION, AND OPPORTUNITIES at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	3.A.4: Work with NJOEM and FEMA to incorporate “recommended revisions” per NJOEM and FEMA Region II review of this Plan into future Plan updates.	High	MCOEM	Ongoing	Existing resources	Builds on successful completion of initial Plan and incorporates NJOEM and FEMA input.	Completed.
Objective 3.B: Support increased NFIP/CRS participation Objective 3.B: cont'd	3.B.1: Conduct community outreach, workshops and training to increase NFIP participation	High	Middlesex OEM, NJOEM	Ongoing	Existing resources	Encourages participation in the program so that losses will be covered and allows eligibility in the FMA program.	MCOEM supports all State and Federal efforts to facilitate workshops and trainings. Worked with FEMA on mapping workshop which had about 400 residents.



GOAL 3: Improve CAPABILITIES, COORDINATION, AND OPPORTUNITIES at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	3.B.2: Encourage municipalities to participate in the CRS program, including potentially setting up CRS site visits and/or workshops for interested jurisdictions.	High	MCOEM, NJOEM	2 years	Existing resources	Encourages participation in the CRS program so that NFIP premiums can be reduced and floodplain management improved	County has continued to support municipal efforts. See updated action below.
	3.B.3: Encourage municipalities to include identification and prioritization of actions related to future participation in and compliance with the NFIP	High	MCOEM. Municipal OEMs	Ongoing	Existing resources	Encourages participation in the CRS program so that NFIP premiums can be reduced and floodplain management improved	The County continues to support municipalities in their efforts to reduce risk and remain compliant with NFIP.



GOAL 3: Improve CAPABILITIES, COORDINATION, AND OPPORTUNITIES at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
Objective 3.C: Support increased integration of municipal/county hazard mitigation planning and floodplain management with effective municipal/county zoning regulation, subdivision regulation, and comprehensive planning	3.C.1: Encourage enforcement of floodplain management as it relates to new and existing construction by integrating hazard mitigation practices with zoning, subdivision ordinances, comprehensive planning, and other land use tools at the municipal level.	High	Middlesex, NJDEP, municipal officials	Ongoing	Existing Resources and Federal grant funds (FEMA CAP-SSSE)	To guide communities in a more effective control and use of floodplains.	The County has very limited authority in this area.



GOAL 3: Improve CAPABILITIES, COORDINATION, AND OPPORTUNITIES at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	3-C.2: Encourage the NJ League of Municipalities to become more involved in mitigation activities, and in particular to support the activities described in Action 3.C.1 and 3.D.1.	High	NJOEM, NJ League of Municipalities	Ongoing	Existing staff	Advances all goals in the plan by increasing preparedness and knowledge of citizens, and law and policymakers.	This is not the role of the County OEM.



GOAL 3: Improve CAPABILITIES, COORDINATION, AND OPPORTUNITIES at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority		
<p>Objective 3.D: Elicit and support efforts by federal and state legislatures and agencies to address shortcomings in existing laws, programs and administrative rules related to hazard mitigation</p>	<p>3.D.1: Encourage enforcement of floodplain management as it relates to new and existing construction by integrating hazard mitigation practices with zoning, subdivision ordinances, comprehensive planning, other land use tools, and environmental and other regulatory mechanisms via state requirements, reviews, and regulations. Coordinate with the State Planning Commission to integrate the State Development and Redevelopment Plan and the SHMP.</p>	High	Municipal building inspectors, zoning boards	Ongoing	Existing resources	To help guide communities in a more effective control and use of floodplains.	Each participating community continues to enforce NFIP requirements and educate officials on importance of regulations. This is not a County responsibility.	
							<p>Middlesex County, New Jersey: 2015 Hazard Mitigation Plan Update</p>	5-35



GOAL 3: Improve CAPABILITIES, COORDINATION, AND OPPORTUNITIES at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
<p>Objective 3.E: Provide for user-friendly hazard-data accessibility for mitigation and other planning efforts and for private citizens.</p>	<p>3.E.1: Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.</p>	High	GCOEM, county agencies, in cooperation with other counties	1 year	Existing resources and staff	<p>Provides a basis for understanding risks and maintaining most current information; provides a good means of maintaining data needed for period updates to the hazard mitigation plan; and (potentially) helps to identify promising sites mitigation actions and grant proposals.</p>	<p>The County is continuing to develop GIS interfaces to use for analysis, dispatch and response, as well as planning efforts.</p>



GOAL 3: Improve **CAPABILITIES, COORDINATION, AND OPPORTUNITIES** at municipal and county levels to plan and implement hazard mitigation projects, programs and activities

Objective	Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
Objective 3.F: Provide direct support, where possible, to municipal mitigation programs.	3.F.1: Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level	High	GCOEM	3 years	UASI	This could help support, coordinate, and consolidate hazard mitigation capabilities.	The County has several regional efforts in addition to the HMP, including the Green Brook Flood Commission, and the Middlesex South Central Flood Commission to address high risk areas in the County.



GOAL 4: Pursue OPPORTUNITIES TO MITIGATE repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs and activities							
Objective	Action	Priority	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
Objective 4.A: Facilitate development and timely submittal of project applications meeting state and federal guidelines for funding (1) for RL and SRL properties and (2) for hardening/retrofitting infrastructure and critical facilities with highest vulnerability ratings	4.A.1: Develop and implement a detailed severe repetitive loss mitigation strategy that will qualify the county and municipalities for 90:10 cost share under the FEMA SRL program.	High	Middlesex OEM, NJOEM	Immediate and ongoing	Existing local, state and federal funding programs.	Protects, people, property and response assets while removing high cost structures from the NFIP.	



GOAL 4: Pursue OPPORTUNITIES TO MITIGATE repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs and activities							
Objective	Action	Priority	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	4.A.2: Continue working with local and regional jurisdictions to encourage their cooperation in making RL (and SRL) property mitigation a high priority, and to offer technical support in carrying out the requirements of FEMA mitigation programs. Specifically, the County will ensure that municipalities have the most current	High	Middlesex OEM, NJOEM	Ongoing	Existing staff, with support from NJOEM and FEMA RH.	Initiates a long-term process to protect property from effects of repetitive flooding.	See updated actions below.



GOAL 4: Pursue OPPORTUNITIES TO MITIGATE repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs and activities							
Objective	Action	Priority	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	and accurate information about RL and SRL properties.						
	4.A.3: Promote acquisition and elevation of repetitive loss and severe repetitive loss structures (see Table 9.3.3.1 for further detail).	High	Middlesex OEM, NJOEM	Ongoing	Federal grants	To eliminate repetitive loss structures	
	4.A.4: Implement mitigation projects and programs intended to reduce risk to critical facilities	High	Varied	Ongoing	Federal grants	To reduce exposure and risk to critical facilities	County has worked with MCUA to harden infrastructure and worked with towns to mitigate critical facilities, where needed.



GOAL 4: Pursue OPPORTUNITIES TO MITIGATE repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs and activities							
Objective	Action	Priority	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	4.A.5: Implement other mitigation projects and programs as appropriate at the municipal level	High	Varied	Ongoing	Varied	Varied	See actions listed in Appendixes 1-25.



GOAL 4: Pursue OPPORTUNITIES TO MITIGATE repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs and activities							
Objective	Action	Priority	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
	4.A.6: Work with NJGS and other County, State and federal agencies to better identify specific sites in the County that may be exposed to the effects of geo-hazards such as landslides, sinkholes and subsidence.	High	MCOEM NJDEP, NJGS	Ongoing	Existing Resources and Federal grant funds	Although risk does not appear to be particularly high from these hazards, there remains a need to better understand the hazards on a site-specific basis. Studies will be used as the basis for developing additional actions and strategies to mitigate risk, particularly when critical facilities are at risk.	The best available data was included in this plan update. Resources have not been available to do in depth study.



GOAL 4: Pursue OPPORTUNITIES TO MITIGATE repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs and activities							
Objective	Action	Priority	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority	
Objective 4.B: Maintain and enhance local planning and regulatory standards related to future development and investments.	4.B.1: Integrate hazard mitigation Plan and priorities into floodplain management, zoning, subdivision regulation, and other local regulations as appropriate.	High	Local permitting and planning offices	Ongoing	Existing County and Local Resources	Implements all goals by mitigating risk to new construction on a jurisdiction-wide basis	The County does not have regulatory authority in New Jersey, where possible all departments support and encourage towns to integrate hazard information into long-term planning.
	4.B.2: Ensure full and effective enforcement of building codes, floodplain management, zoning, and other risk-reducing regulations.	High	Local permitting and planning offices	Ongoing	Existing County and Local Resources	Advances all goals in the plan by ensuring effectiveness of existing local tools	This is outside of the responsibilities of the County



Notes:

- (1) Priority rankings were developed by MCOEM. .

5.3.3 New Mitigation Actions for Middlesex County

Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority
Reconsider and pursue mitigation options for South Central Flood Commission	High	Middlesex County Office of Engineering	1-5 years	Staff time, Federal grants	Implementing the recommendations from USACE study will reduce flooding in extreme repetitive loss area that affects several towns in the south central area of the County.
Create CRS Support Program for Communities	High	Middlesex County Office of Planning	1-3 years	Staff time	Improve municipal participation in CRS program.
Work with towns to implement MS4 Mitigation Plans	High	Middlesex County Office of Planning	1-3 years	Staff time	Improve stormwater management and reduce localized flooding throughout County.
Support towns in toughening stormwater regulations for redevelopment	Medium	Middlesex County Office of Planning	1-3 years	Staff time	Improve stormwater management and reduce localized flooding throughout County.
Develop model ordinances on stormwater management and green infrastructure for towns to use	Medium	Middlesex County Office of Planning	1-2 years	Staff time	Increase municipal capabilities to regulate stormwater



Action	Priority (1)	Responsible Agency	Projected Timeline	Projected Resources	Rationale for Action and Priority
Acquire or elevate all severe repetitive loss and repetitive loss properties	High	Middlesex County	2-3 years	FMA grant	Reduce potential property loss from flooding and minimize
Mitigate park buildings in repetitive loss areas and high-risk areas.	High	Middlesex County Office of Parks & Recreation	2-5 years	Grants/Capital Budget	Reduce damage and losses to County property
Provide redundant power supply at all County Critical Instructure sites including fueling facilities, critical distribution points, shelters and back-up disaster facilities	High	Middlesex County Office of Parks & Recreation	2-5 years	Grants/Capital Budget	Allow for critical operations during and after a storm event.
Salt resource protection	High	Middlesex County Office of Parks & Recreation	2-5 years	Grants/Capital Budget	Protection of salt storage areas from flooding and other hazards of concern.
Acquisition and elevation projects in Manalapan Brook Watershed and in flood areas around Manalapan Lake	High	Middlesex County Office of Parks & Recreation	2-5 years	Grants/Capital Budget	Reduce flooding in extremely repetitive flood areas.
Wildfire protection and improve capability to address fires in wildland-urban interface.	High	Middlesex County Office of Parks & Recreation	2-5 years	Grants/Capital Budget	Reduce fire risk at the wildland-urban interface and keep fire breaks and roads accessible for emergency personnel.

5.3.4 Municipality-Specific Mitigation Actions

Within Middlesex County, there are 25 participating municipalities. Strategies for hazard mitigation within Middlesex County and the municipalities were identified to reduce damage to those areas and conform to the requirements of the IFR. The following indicates the specific mitigation actions on a



community by community basis including the rankings assigned to the projects by the municipalities.

Each participating municipality in Middlesex County identified mitigation actions and programs based upon the risk assessment and capabilities assessment. These are detailed in each municipal appendix, Appendices 1-25. In all cases, these actions support Goal #4, i.e., pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs and activities.

5.4 Prioritization and Implementation of Mitigation Actions

The preceding section and municipal mitigation strategies identify specific actions to achieve identified goals, an appropriate responsible party for each action, and a schedule for accomplishment and suggested funding sources. These tables also indicate an initial prioritization of the actions.

In the case of the county-wide actions, priorities were initially determined on a qualitative basis by the HMPSC. The considerations were general feasibility and anticipated effectiveness in reducing risk. Detailed benefit cost analyses were not performed (see notes below) but general cost effectiveness of the types of actions being considered was taken into account.

In addition, an analysis of these actions was undertaken in a systematic way that is called the *Social, Technical, Administrative, Political, Legal, Economic, and Environmental* (STAPLEE) method. Table 9.5-1 describes the basic steps in the STAPLEE methodology.

Table 5-4–STAPLEE Methodology

STAPLEE	Criteria Explanation
S–Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community’s social and cultural values.
T–Technical	Mitigation actions are technically most effective if they provide long term reduction of losses and minimal secondary adverse impacts.
A–Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P–Political	Mitigation actions can truly be successful if all stakeholders been offered an opportunity to participate in the planning process and if there is public support for the action.
L–Legal	It is critical that the jurisdiction or implementing agency the legal authority to implement and enforce a mitigation action.
E–Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.



STAPLEE	Criteria Explanation
E–Environmental	Sustainable mitigation actions that do not an adverse effect on the environment, that comply with federal, state, and local environmental regulations, and that are consistent with the community’s environmental goals, mitigation benefits while being environmentally sound.

This method was used by MCOEM to weigh the various criteria for each of the identified actions and objectives including the relative cost-effectiveness as part of the “Economic” criteria. The resulting priority rankings are shown in Table 5-4.

For the municipal mitigation actions, initial priorities were set in a similar manner by the Local Coordinators; the mitigation action items with highest priority were generally considered to be the most cost effective and most compatible with the communities’ social and cultural values.

Individual communities will implement identified projects with their own resources as they are able to program capital improvement funds. The individual municipalities will generally follow the priorities set in this plan although variations in funding may alter the specific order. However, it is anticipated that the majority of the actions in the Plan will be implemented as funds become available through various federal mitigation grant programs.

The HMPSC will also use the STAPLEE methodology to help them consider and prioritize potential action items for funding applications at that time

The HMPSC determined that it will be appropriate to revisit this STAPLEE analysis when funding is either available or being actively sought, because the qualitative characteristics of certain projects or priorities may shift over time or as a result of changing circumstance.

Once funding sources are identified (e.g., via grant announcements from NJOEM or FEMA) the list of mitigation actions will be reviewed to select actions that meet the particular grant criteria. Then, the Middlesex HMPSC, working in coordination with the Local Coordinators will determine priority rankings for the short list of projects. Tentatively, the HMPSC has defined High, Medium, and Low priorities to be assigned in this process as follows:

- High: Meets five of the seven STAPLEE criteria
- Medium: Meets four of the seven STAPLEE criteria
- Low: Meets three of the seven STAPLEE criteria

Depending on the available grant funding, the HMPSC, again working with the Local Coordinators, will determine how many of the selected and prioritized projects should be submitted for funding starting with the highest priority projects as determined at the time.



Benefit-Cost Analysis

Per the IFR, communities are required to use benefit cost analysis to prioritize projects for implementation. At this stage, the analysis of costs and benefits has been done at a general level as part of the STAPLEE methodology. However, as project funding becomes available, the county and municipalities will undertake a more extensive process.

Benefit-cost analysis (BCA) compares the benefits of mitigation measures to the costs, and is a technique used for evaluating the cost-effectiveness of mitigation measures. FEMA requires a BCA for all mitigation projects that receive FEMA funding.

The Middlesex HMPSC discussed the potential costs associated with each type of mitigation measure and decided that any project could be cost effective if its scope were properly tailored to the situation. For example, one of the most effective mitigation measures identified for repetitively flooded structures is elevation.

It may not be cost effective to elevate every single repetitively flooded structure in the County, but it certainly would be cost effective to elevate those that cause the largest drain to the National Flood Insurance Program (NFIP).

After discussing the possible costs of the various mitigation measures, the Middlesex HMPSC decided that instead of working on developing a very generic BCA at this time for projects that may not ever be authorized, they would wait until specific funding sources are identified and available. For example, most municipalities are not financially capable of elevating or acquiring any repetitively flooded structures without Federal Grant assistance. However, at the time that grants become available [Hazard Mitigation Grant Program (HMGP) after disasters or Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) grants annually], the County will collect detailed information on each structure that is interested in participating in the grant program and perform a BCA to help rank the structures as part of the STAPLEE process to determine which should receive funding first.

5.5 Capability Assessment

Although not required by DMA 2000 or the Interim Final Rule, a capability assessment adds context to a mitigation plan by providing an inventory of a jurisdiction's programs and policies, and an analysis of its capacity to carry them out. These are essential for developing mitigation strategies and actions. This section was not updated for the 2016 Plan Update as the County capabilities have not changed since 2010. The Municipal Capability Assessment has been updated for each town and is included in Section 4 of each municipal appendix.

The capability assessment is a review of Middlesex County's resources in order to identify, review, and analyze what the county is currently doing to reduce losses, and to identify the framework that is in place for the implementation of new mitigation activities. A helpful component is to understand coordination efforts with the New Jersey State Office of Emergency Management (NJOEM) and federal agencies and resources. In addition, this assessment will be useful in gauging whether the current local



organizational structures and inter-jurisdictional or county coordination mechanisms for hazard mitigation could be improved, and how.

This local capability is extremely important, because the municipal officials know their own landscape best. Additionally, many of the most critical and effective hazard mitigation strategies and programs, including enforcement of floodplain management, building codes, and land-use planning, require a strong local role to achieve effective implementation.

New Jersey follows a strong “Home Rule” legal philosophy. That philosophy dictates that all land in the state not directly belonging to a government entity is incorporated into a municipality, and that each municipality must assign an individual to be responsible for its local emergency management duties; that person is responsible for coordinating municipal emergency response with county, state and federal officials.

5.5.1 Methodology

This capability assessment results from research, interviews, and surveys. Relevant documents were reviewed related to hazard mitigation, including especially the New Jersey State Hazard Mitigation Plan Update (2008), as well as state and federal sources related to funding, planning, and regulatory capability. Extensive summary information from these sources can be found in Appendix F1-F.3.

For the county capability assessment, a series of in-depth one-on-one interviews provided key insights and information. In Middlesex County, these interviews were conducted during the month of July 2008 with the following individuals:

- John Ferguson, Deputy Emergency Management Coordinator, County Office of Emergency Management
- Jane Leal, Director of Administration, County Improvement Authority
- George Ververides, Director of County Planning, County Planning Board
- Ralph Albiner, Director, County Parks and Recreation Department
- Joe Valdes, Supervising Engineer, County Engineering Department

For the municipal capability assessment, a web-based survey tool was designed and administered. The questions were vetted by the Middlesex County Office of Emergency Management (MC OEM), and the survey was live from April 30, 2008 until June 30, 2008. The survey was targeted to the primary municipal contacts for this planning process. For the most part, these are municipal Office of Emergency Management (OEM) coordinators. Other municipal staffs with relevant expertise – including those in the departments of planning, public works, and buildings – were encouraged to take the survey as well.

The survey generally covered the following topics:

- Staff, personnel, and technical capability
- Knowledge of FEMA mitigation programs
- Current/ongoing mitigation efforts
- Intra- and inter-governmental coordination



- Land use and regulation
- Floodplain management
- Building code inspection
- Capital improvement
- Land conservation programs

The text of this survey, as well as tabular results and the results of each respondent can be found in Appendix F.4 of the 2010 Plan.

Additionally, a separate survey was created to assess the knowledge of the general public in matters related to hazard mitigation. This is a key capability issue, as many of the most crucial mitigation decisions are made by members of the public. The questions were vetted by the MC OEM, and the survey was posted on the Middlesex County website. To date, the survey has not yet generated sufficient responses to draw meaningful results, but in the future such an analysis can be performed. The text of this survey can be found in Appendix F.4 of the 2010 Plan.

National Flood Insurance Program, Floodplain Management, and Building Codes

Improved floodplain management, including land use planning, zoning, and enforcement at the local level can reduce flood related damages for both existing buildings and new development and are consistent with Goal 3. The use of the National Flood Insurance Program (NFIP) is critical to the reduction of future flood damage costs to the taxpayer.

About 17.9 percent of Middlesex County is located in a floodplain. All developments, regardless of the location, require a permit to include buildings, fill, and any other type development. In Middlesex County, the local municipality coordinates the necessary permits through their permitting and construction office.

The NFIP requires that when the cost of reconstruction, rehabilitation, addition, or other improvements to a building equals or exceeds 50% of the fair market value, then the building must meet the same construction requirements as a new building. Substantially damaged buildings must be brought up to new construction standards. A residence or building damaged so that the cost of repairs equals or exceeds 50% of the structure's fair market value must also be elevated above the Base Flood Elevation (BFE) in flood zones where BFE's exist.

See Table 5-1 for the dates when the communities of Middlesex County joined the NFIP. Each municipality within Middlesex County is expected to appoint a Floodplain Manager to enforce municipal floodplain ordinances. These ordinances are meant to address methods and practices to minimize flood damage to new and substantial home improvement projects, as well as addressing zoning and subdivision ordinances and state regulations as enforced through the New Jersey Department of Environmental Protection.

Within floodplain management as a whole, the education process must play an important role. As noted above, an effective education program should be implemented to show citizens the importance of



building codes and ordinances and how cost effective they could be in reducing future damages.

Established through the NFIP, the Community Rating System (CRS) is a program that counties and municipalities can elect to join. Once a county has joined, participants receive a discount on their flood insurance premiums. As a result of being part of the CRS, the county would have to actively pursue public outreach programs. One of the requirements of CRS is an annual outreach project, such as a Repetitive Loss Outreach Program. This program would focus on repetitive loss areas within the county and consists of three main components. The first is to advise the homeowners that they live in a repetitive loss area and could be subject to flooding. The second is to give the homeowner appropriate property protection measure guidelines. The third is to make the homeowner aware of the basic facts about Flood Insurance.

The New Jersey Unified Construction Code is the mandated construction code for all New Jersey Communities. The State of New Jersey Department of Community Affairs issues licenses to all Construction Code and Sub-code officials that enforce the State's Uniform Construction Code.

However, the State's Department of Environmental Protection is the lead State agency for the administration of the State's Floodplain Management Program. Each community that participates in the National Flood Insurance Program must adopt and enforce municipal floodplain management regulations that meet or exceed the minimum requirements of the NFIP as directed by the State's Floodplain Management Program. This requirement is in addition to the enforcement of the State Uniform Construction Code.



**Table 5-1
National Flood Insurance Program**

Name of Community	Date Joined NFIP
Carteret Borough	November 15, 1975
Cranbury Township	May 17, 1982
Dunellen Borough	April 1, 1977
East Brunswick Township	January 6, 1982
Edison Township	August 16, 1982
Helmetta Borough	October 16, 1984
Highland Park Borough	June 1, 1977
Jamesburg Borough	May 15, 1984
Metuchen Borough	December 4, 1979
Middlesex Borough	July 9, 1971
Milltown Borough	February 4, 1981
Monroe Township	April 17, 1985
New Brunswick City	December 4, 1979
North Brunswick	May 1, 1980
Old Bridge Township	November 15, 1985
Perth Amboy City	December 18, 1979
Piscataway Township	January 18, 1984
Plainsboro Township	June 19, 1985
Sayreville Borough	March 16, 1981
South Amboy City	December 4, 1979
South Brunswick	December 18, 1985
South Plainfield Borough	August 1, 1980
South River Borough	June 4, 1980
Spotswood Borough	December 18, 1979
Woodbridge Township	June 2, 1972

Each community in Middlesex County that is a participating community in the NFIP Program is required to have both a well-trained Municipal Floodplain Manager and Construction Code Official. To ensure adequate enforcement of both codes, each community in Middlesex County should encourage additional training opportunities for all code enforcement personnel, to include its Municipal Floodplain Manager.

Floodplain management and building codes serve to assist the communities with problems experienced from floods, hurricanes, tornadoes, and thunderstorms/lightning/high winds as well as other lower priority hazards.



5.3.2 Inventory of Regulations, Plans and Funding Sources

This section, including Table 5-2, provides summary information regarding selected federal and state regulations, plans, and sources of funding that are relevant to mitigation projects and activities. For additional information regarding funding availability and eligibility, and other detail about and evaluation of these regulations, plans, and funding sources, see Appendix F.1-F.3 of the 2010 Middlesex County Hazard Mitigation Plan.

Also, see Table 5-3 for further discussion and evaluation of key regulations and minimum standards that are implemented at the municipal level.

Table 5-2:
Summary of Selected State and Federal Regulations, Plans, and Funding Sources Relevant to Natural Hazard Mitigation

Title	Program Type	Administered by/ Eligible recipient		
		State	County	Municipality
Farm Bill Cons. Program/ Farm and Ranch Lands Protection Program	Funding (Fed.)	NJDOA/Div. of Agriculture and Natural Resources	X	X
FEMA Public Assistance (PA) grants	Funding (Fed.)	NJOEM	X	X
FEMA Hazard Mitigation Grant Program (HMGP)	Funding (Fed.)	NJOEM	X	X
FEMA Pre-Disaster Mitigation (PDM) grants	Funding (Fed.)	NJOEM	X	X
FEMA/NFIP Repetitive Flood Claims (RFC) grants	Funding (Fed.)	NJOEM	X	X
FEMA/NFIP Flood Mitigation Assistance (FMA) grants	Funding (Fed.)	NJOEM	X	X
National Dam Safety Program/ Water Resources Devt. Act (WRDA)	Funding (Fed.)	NJDEP/Dam Safety Section		(specific waterways explicitly identified in WRDA)
HUD Community Development Block Grants (CDBG)	Funding (Fed.)	NJDCA/Division of Community Resources	X	X
Land and Water Conservation Fund	Funding (Fed.)	NJDEP/Green Acres Program	X	X
USDA Forest Legacy Program	Funding (Fed.)	NJDEP/Green Acres Program		(available to private landowners)
NJ Open Space Program	Funding (local)	NJDEP/Green Acres Program	X	X
Community Wildfire Hazard Mitigation Assistance Program	Funding (NJ)	NJDEP/Forest Fire Service	X	X



Title	Program Type	Administered by/ Eligible recipient		
		State	County	Municipality
Shore Protection Program	Funding (NJ)	NJDEP/Ofc. of Engineering and Construction	X	X
Green Acres	Funding (NJ)	NJDEP/Green Acres Program	X	X
Coastal Blue Acres	Funding (NJ)	NJDEP	X	X
Farmland Preservation Program	Funding (NJ)	NJDOA/State Agriculture Devt. Committee	X	X
Freshwater Wetland Protection Act/ Wetland Mitigation Fund	Funding (NJ)	NJDEP	X	
Dam Restoration and Inland Water Projects Loan Program	Funding (NJ)	NJDEP	X	X
Sewerage Infrastructure Improvement Act Grants	Funding (NJ)	NJDEP	X	X
NJ Small Communities CDBG	Funding (NJ)	NJDCA/ Division of Community Resources	X	X
Environmental Infrastructure Financing Program	Funding (NJ)	NJDEP		Any public, private, or non-profit owned water system
Transportation Trust Fund Municipal Aid	Funding (NJ)	NJDOT/Division of Local Aid	X	X
Transportation Trust Fund	Funding (NJ)	NJDOT	X	
New Jersey Conservation Foundation (NJCF)	Funding (private)			(private program)
NJ Devt. and Redevt. Plan	Plan	NJDCA/OSG	X	X
Watershed Permitting	Regulation	NJDEP/Municipal Stormwater Regulation Water Quality Div.		X
NJ Flood Hazard Area Control Act	Regulation	NJDEP/Flood Control Section		X
Uniform Construction Code	Regulation	NJDCA/Division of Codes		X
Uniform Fire Code	Regulation	NJDCA/Fire Safety Division		X
Flood Hazard Area Control Act	Regulation	NJDEP	X	X
Safe Dam Act	Regulation	NJDEP	X	X
Waterfront Devt. Statute and Coastal Permit Program	Regulation	NJDEP/DLUR		X



Title	Program Type	Administered by/ Eligible recipient		
		State	County	Municipality
Coastal Area Facility Review Act (CAFRA)	Regulation	NJDEP/DLUR		X
Wetlands Act/ Coastal Zone Mgt. (CZM)	Regulation	NJDEP/DLUR		X
Stormwater Mgt. Rules	Regulation	NJDEP		X
Tidelands Act	Regulation	NJDEP		X
Municipal Land Use Law	Regulation	NJDEP/B. of Land Use Compliance		X

For many federal grants, the non-federal share can be borne by the state as “grantee”, the recipient community as “subgrantee” or in some cases, the property owner who benefits from the project. In the case of property acquisitions intended to remove properties that experience repetitive flood losses, the non-federal share is typically covered by the property owner, who accepts the federal share of 75% and documents the lost equity as the non-federal share. This can serve as a disincentive to participation.

It is also important to note in this discussion of federal plans that on March 19, 2009, during the development of this Plan, FEMA approved a multi-year initiative called “Risk Mapping, Assessment and Planning” or “Risk MAP”. The plan implementation spans FY10-FY14 and builds on the success of FEMA’s Map Modernization program that will soon be concluding the work to provide reliable digital flood mapping for the majority of the Nation’s population.

Per FEMA’s website⁷², the “vision for Risk MAP is to deliver quality data that increases public awareness and leads to action that reduces risk to life and property”. One objective of the initiative is to “[r]educe losses of life and property through continuous improvement of mitigation plans”, which is consistent with the goals and specific action items in this Plan. The Mitigation Action Plan for Middlesex County (see Section 9) includes an action item that specifically includes ensuring that Middlesex County takes full advantage of any opportunities that the Risk MAP program will provide.

5.3.3 Implications of NJOEM Capabilities on Local Hazard Mitigation Efforts

State capabilities for hazard mitigation have an impact on the efficacy of local planning and implementation. In accordance with the State Hazard Mitigation Plan, the focus of New Jersey’s statewide hazard mitigation effort is centered in the New Jersey Office of Emergency Management (NJOEM), located in the Division of State Police.

NJOEM is represented on the State Hazard Mitigation Team (SHMT), which is chaired by a representative of the Governor’s Office. Other state agencies represented on the SHMT and actively involved in hazard mitigation include the Department of Environmental Protection (NJDEP), the

⁷² <http://www.fema.gov/plan/ffmm.shtm>



Department of Community Affairs (NJCA), the Department of Transportation (NJDOT), and the Department of Banking and Insurance (NJDOBI).

The SHMT has responsibility for the following, at a minimum:

- Identifying hazards monitoring changes in hazard vulnerability, and implementing measures for reducing potential damage by providing a mechanism for follow-up activities crucial to the successful implementation of team recommendations.
- Developing and maintaining a comprehensive state hazard mitigation plan for the reduction of natural hazards.
- Promoting public awareness of risks associated with known hazards and preparedness among residents of the State.
- Serving as an advisory group to the Governor's Advisory Council on Emergency Services (GACES) and preparing post-disaster hazard mitigation recommendations for all applications for assistance.
- Investigating and recommending cost-effective hazard mitigation opportunities to the NJOEM and the Governor's Advisory Council on Emergency Services as part of any disaster recovery effort.

The SHMT continues to be a resource for jurisdictions in the planning, prioritizing, and funding of mitigation projects. Representatives from the SHMT attended a workshop for the development of this plan update to provide technical guidance on the development of actions.

5.3.4 Relevant Ordinances and Policies

This section, as illustrated in Table 5-3, provides a list of Middlesex County ordinances and policies that have the potential to affect and/or promote mitigation within the county. Understanding which ordinances and policies affect mitigation in the county is a helpful component to mitigation activities. Many of the ordinances and policies that most directly affect development in relation to hazards reside at the municipal level. These include zoning, floodplain management, and building code enforcement.



Table 5-3:
Middlesex County Ordinances and Policies Relevant to Hazard Mitigation
(Source: County Interviews)

Ordinance/ Policy	Description	Enforcement
Municipal Land Use Law	Encourages appropriate development in municipalities that promotes public health, safety, morals, and general welfare	Planning
Cross-Acceptance Report	Encourages consistency between municipal, county, regional, and state plans for development and redevelopment.	Planning
Open Space Master Plan	The County's Open Space Master Plan was adopted in 2004	Parks and Recreation

5.3.5 Fiscal Capacity

This section, as illustrated in Table 5-4, provides a list of local funding sources within Middlesex County and determines if that funding source can be used to affect or promote mitigation within the County. Understanding where potential funding sources are available to the county is a helpful component to mitigation activities.

Table 5-4:
Middlesex County Funding/Financing Sources Relevant to Hazard Mitigation
(Source: County Interviews)

Financial Resources	Accessible or Eligible to Use
General Fund	Yes
Development Fees	No
Community Development Block Grant (CDBG)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy taxes for Specific Purposes	Yes
Fees for Water, Sewer, Gas or Electric Service	Yes
Green Acres Fund	Yes
Impact Fees for Homebuyers or Developers for New Developments/Homes	No
County Match Fund	Yes
Transportation Grant Funds	Yes
Federal Hazard Mitigation Grants	Yes (once the plan is approved by FEMA and adopted, participating jurisdictions will be eligible for HMGP, PDM, and other federal grants)



Through its bonding authority, the Middlesex County Improvement Authority (MCIA) can finance major infrastructure improvements. The county and municipalities can take advantage of low interest rates when financing projects this way. A program which the MCIA runs called the Capital Equipment and Improvement Program is new for 2008. This program allows the agency to provide financing for purchasing equipment and making capital improvements. The program, which closes in September 2008 and may be reauthorized for 2009 depending on participation, could lend itself to be an extremely effective way to finance hazard mitigation projects.

The county may also use monies from the County Match Fund or General Fund to assist municipalities in funding hazard mitigation projects. Generally, the following conditions must be met in order for a project to be considered for county funding: it must be developed in conjunction with the County Office of Emergency Management and NJOEM to be sure it utilizes the criteria priorities located within the State Hazard Mitigation Plan (SHMP) and the project must be reviewed and approved by the county freeholders. Additionally, counties may participate in projects that affect county infrastructure, including roads and drainage infrastructure.

5.3.6 Technical, Administrative, and Regulatory Capacity

This section provides a review of the administrative and technical resources within the county's departments to determine if all of the necessary resources are available to Middlesex County to engage in mitigation planning processes. Table 8.4.3-1 indicates potential resource needs, and indicates whether the county currently has staff with that expertise or available outside contractors.

**Table 5-5:
Middlesex County Administrative and Technical Capacity
(Source: County Interviews)**

Staff/Personnel Resources	On Staff	Department/Agency
Planner(s) or engineer with knowledge of land development and Land management practices	Yes	Planning
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Engineering
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	No	
Floodplain Manager	No	
Surveyors	Yes	Engineer
Staff with education or expertise to assess the community's vulnerability to hazards	Yes	Engineer
Personnel skilled in GIS and/or HAZUS	Yes	Planning/Engineering
Scientists familiar with the hazards of the community	No	
Emergency Manager	Yes	OEM



Additionally, although most land-use related regulatory powers in New Jersey reside at the municipal level, counties have the ability to influence and guide development in important ways. These are discussed below.

Intra- and Inter-Jurisdictional Coordination

The County Office of Emergency Management reported having a good relationship with its municipal counterparts as well as other county departments. In the past, the majority of this interaction has been in response to events and not necessarily specific to hazard mitigation projects, however it is assumed with the development of this hazard mitigation plan there will be better communication or coordination on project implementation. The relationship with NJOEM is well established and close coordination has happened during previous interactions. The county has had only one event requiring significant FEMA interaction and it was reported that things went smooth and all parties involved were satisfied with the outcome.

Regionalization

Municipalities in New Jersey are currently being encouraged to consolidate (“regionalize”) services and functions. These may include police, fire, EMS, limited emergency operations functions, and other items. In Middlesex County, even though the county freeholders are working towards shared services, the conversation process remains slow and for the most part the regionalization process has yet to begin.

Two areas to see some regionalization are communications and in the detection, deterring, response to and recovery from threats and incidents of terrorism. The New Jersey Urban Security Initiative (UASI) provides resources to state, county, and municipal governments to develop plans for terrorism events on a regional level. While this initiative focuses primary on operations and is still relatively a new concept, the coordination and cooperation being established will strengthen the process of regionalizing other services in the county.

In terms of regionalizing hazard mitigation efforts the county currently feels this would not work and the municipal OEMs should continue to remain responsible for their mitigation programs. Reasons for this revolve mainly around limited staffing at the county level that would not allow the close coordination needed to effectively manage a program of this type.

Land Use Planning and Regulation

The Middlesex County Planning Department has the authority to approve or reject all land development projects and site plans at the municipal level under the New Jersey Municipal Land Use Law. This gives the county some control and provides a mechanism for coordinated development. The Planning Department also has several divisions that have direct control over reducing or eliminating potential risks. These divisions are described briefly below.

The Division of Environment, Parks and Comprehensive Planning carries out a wide range of planning functions and programs relating to land use, environmental and infrastructure issues in Middlesex County. The Division is responsible for preparing and updating the land use and demographic elements



of the County Comprehensive Plan. This division prepares and updates the Open Space and Recreation, Aquifer Protection, Water Supply, Wastewater Management, Storm Drainage, energy, and general environmental resources management elements of the County Plan. Division staff also conducts environmental and functional planning reviews required by other divisions under various regulations.

The Division of Land Development Review is responsible for reviewing development proposals (i.e. Subdivision and Site Plan Applications) to determine whether county roads/property and or drainage facilities would be adversely affected. The objective with this is to reduce hazards to the general public caused by unsafe traffic conditions and or flooding. The county also encourages municipalities to coordinate large development projects with them to address any transportation, wastewater, and storm drainage issues that may arise.

Floodplain Management

Floodplain management in Middlesex County is a function strictly handled at the municipal level of government. The county is not responsible for adopting or enforcing a minimum floodplain ordinance. At the municipal level, all 25 municipalities have adopted some type of ordinance that restricts or controls development or construction in flood prone areas.

Building Code Enforcement

Building code enforcement in Middlesex County takes place at the municipal level of government. All municipalities are required by New Jersey law to enforce the New Jersey Uniform Construction Code. Building codes are either enforced by local inspectors or third party contractors.

Economic Development Planning

The Middlesex County Office of Economic Development acts as a liaison between business, government and other organizations which have impact on economic development. The department serves as the primary contact agency for businesses seeking assistance within the county, and acts as a clearinghouse for local, county, state and federal assistance programs and services. This includes providing property tax abatements and exemptions, various tax credits, and providing special grants to stimulate economic development. While there are no policies directly affecting at risk areas, the services provided do lend themselves to be potential mechanisms to incorporate hazard mitigation best practices.

Capital Improvements Planning

The County Treasurer, by law, is the custodian of all county funds and is responsible for meeting the county's long and short term capital fund requirements. Drainage projects and improvements to roads, bridges, and county facilities receive annual appropriations in the budget which are important projects in terms of hazard mitigation.

Land Conservation

Middlesex County maintains an active land conservation program through two specific programs, the Farmland Preservation Program and the Open Space Preservation Program. Funding for the Open Space Preservation Program comes partially through the State's Green Acres program and also from a county



open space tax. As such, the county is bound to all Green Acres regulations during the appraisal process of acquiring land which includes surveying, soil studies, etc. Once acquired, the land is typically designated as park or recreation land and is then maintained by the county.

While hazard mitigation may not formally be expressed as such in this process, much of the acquired land has been adjacent to bodies of water, wetlands, or part of existing county parklands and therefore reducing exposure.

Capital Improvement Planning

Most respondents (58%) reported that the executive leadership of their municipality oversees the capital improvement program. Very few (14%) reported that hazard mitigation projects are generally considered as part of the capital improvements program, however 21% reported that capital improvement projects themselves are assessed for hazard or hazard mitigation implications.

Land Conservation

Most respondents (71%) stated that their municipalities participate in land conservation programs such as Green Acres and Blue Acres. Administration of these programs was spread through the departments of environmental protection/quality, public works, building department and others. Thirty-three percent reported that Green Acres and Blue Acres funds are used for scenic or conservation landscape; however no respondents stated that such funds are used for any hazard mitigation purposes.

5.6 Current and Completed Hazard Mitigation Programs and Projects

This section provides a review of the completed hazard mitigation projects or programs and provides a description of potential or in-process projects or programs and the agency or agencies that the county worked with or is working with to complete the projects. Table 5- outlines several ongoing projects



**Table 5-6:
Current and Completed Hazard Mitigation Programs and Projects
(Source: County Interviews)**

Program or Project	Description	Agency
Hazard Mitigation Plan	The county and its municipalities are currently in the process of updating a Multi-hazard, Multi-jurisdictional Hazard Mitigation Plan.	Middlesex OEM
South Central Middlesex County Flood Control Commission	The county has contributed \$100,000 to study the drainage areas of the Manalapan Brook and Matchaponix Brook. The Commission received a report outlining several mitigation projects. The strategy in this plan update reflects the County's priority to review those recommendations for potential implementation, funding dependent.	SCMCFCC
Green Brook Flood Control Commission	The County and impacted municipalities have been long time participants in the GBFCC to develop a comprehensive flood control solution for the entire Green Brook Basin	GBFCC