



SECTION 6. MITIGATION STRATEGY

2019 HMP Update Changes

- The goals, and objectives were updated to align with the county and state’s current mitigation priorities.
- A SWOO exercise was conducted for Burlington County and summarized in this section.
- The mitigation strategy evaluation and prioritization methodology was updated and expanded.

6.1 INTRODUCTION

This section presents mitigation actions for Burlington County to reduce potential exposure and losses identified as concerns in the Risk Assessment section of this 2019 HMP update. The Steering and Planning Committees reviewed the risk assessment to identify and develop these mitigation actions, which are presented herein.

This section includes:

- 1) Background and Past Mitigation Accomplishments
- 2) General Mitigation Planning Approach
- 3) Review and Update of Mitigation Goals and Objectives
- 4) Capability Assessment
- 5) Mitigation Strategy Development and Update

6.2 BACKGROUND AND PAST MITIGATION ACCOMPLISHMENTS

In accordance with the requirements of DMA 2000, detailed in Section 1 (Introduction), a discussion regarding past mitigation activities and an overview of past efforts is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this plan update. Burlington County, through previous and ongoing hazard mitigation activities, has demonstrated that it is proactive in protecting its physical assets and citizens against losses from natural hazards. Examples of previous and ongoing actions and projects include the following:

- The county facilitated the development of the original and 2014 update of the Burlington County Hazards Mitigation Plan. The current planning process represents the regulatory five-year plan update process, which includes participation of 40 municipal governments in the county, along with key county and regional stakeholders.
- All municipalities, with the exception of the Borough of Fieldsboro, participating in this HMP update participate in the NFIP, which requires the adoption of FEMA floodplain mapping and certain minimum standards for building within the floodplain.
- Reports, plans, and studies relating to or including information on natural hazards or natural hazard policies affecting Burlington County have been reviewed and incorporated into this plan update as appropriate, as discussed in Section 3 (Planning Process).
- Municipalities have actively participated in available mitigation grant funding opportunities to implement mitigation projects. Details on these projects are presented in Section 9 (Jurisdictional Annexes) of this HMP update.
- Municipalities have incorporated hazard mitigation into their daily operations and planning mechanisms. A summary of current and future plan integration activities are presented in each municipality’s annex in Section 9 (Jurisdictional Annexes) of this 2019 HMP update.



These past and ongoing activities have contributed to the county's understanding of its hazard preparedness and future mitigation activity needs, costs, and benefits. These efforts provide a foundation for the Planning Committee to use in developing this 2019 HMP update.

6.3 GENERAL MITIGATION PLANNING APPROACH

The overall approach used to update the county and local hazard mitigation strategies are based on FEMA and State of New Jersey regulations and guidance regarding local mitigation plan development, including:

- DMA 2000 regulations, specifically 44 CFR 201.6 (local mitigation planning).
- FEMA Local Mitigation Planning Handbook, March 2013.
- FEMA Local Mitigation Plan Review Guide, October 1, 2011.
- FEMA Integrating Hazard Mitigation into Local Planning, March 1, 2013.
- FEMA Plan Integration: Linking Local Planning Efforts, July 2015.
- FEMA Mitigation Planning How-To Guide #3, Identifying Mitigation Actions and Implementing Strategies (FEMA 386-3), April 2003.
- FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, January 2013.

The mitigation strategy update approach includes the following steps that are further detailed later in this section:

- Section 6.4 – review and update mitigation goals and objectives
- Section 6.5 – identify mitigation capabilities and evaluate their capacity and effectiveness to mitigate and manage hazard risk
- Section 6.6 – prepare an implementation strategy, including:
 - Identify progress on previous county and local mitigation strategies.
 - Develop updated county and local mitigation strategies.
 - Prioritize projects and initiatives in the updated mitigation strategy.

6.4 REVIEW AND UPDATE OF MITIGATION GOALS AND OBJECTIVES

This section documents the efforts to update the hazard mitigation goals and objectives to reduce or avoid long-term vulnerabilities to the identified hazards.

6.4.1 Goals and Objectives

According to 44 CFR 201.6(c)(3)(i): “*The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*” Further, FEMA mitigation planning guidance recommends establishing objectives to better tie mitigation goals to specific mitigation strategies (e.g. projects, activities, and initiatives).

For the purposes of this HMP update, goals are defined as follows:

Goals are general guidelines that explain what is to be achieved. They are usually broad, long-term, policy-type statements and represent global visions. Goals help define the benefits the HMP is trying to achieve. The success of the HMP, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of hazard mitigation).



FEMA defines **Goals** as general guidelines that explain what should be achieved. Goals are usually broad, long-term, policy statements, and represent a global vision.

FEMA defines **Objectives** as strategies or implementation steps to attain mitigation goals. Unlike goals, objectives are specific and measurable, where feasible.

FEMA defines **Mitigation Actions** as specific actions that help to achieve the mitigation goals and objectives.

Objectives are short-term aims which, when combined, form a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

During the 2019 plan update process, the Steering Committee reviewed the goals and objectives established in the 2014 HMP in consideration of the hazard events and losses since the 2014 plan, the updated hazard profiles and vulnerability assessment, the goals and objectives established in the State of New Jersey 2014 HMP, and county and local risk management plans. The update incorporates direct input for how the county and municipalities need to move forward to best manage their hazard risk. Amendments include additions and edits to goals and objectives to express the planning partnership’s interests in integrating this plan with other planning mechanisms/programs and to support mitigation through the protection and preservation of natural systems, including particular

reference to certain goals and objectives in the State of New Jersey 2014 HMP update, as identified in the table below.

As a result of this review process, the goals and objectives for the 2019 update were amended, as presented in Table 6-1. *Italicized* text indicates the updates for this plan.

Table 6-1. Burlington County Hazard Mitigation Plan Goals and Objectives

Obj. #	Objective Statement	Goals					
		Protect Life	Protect Property	Promote a Sustainable Economy	Protect the Environment	Increase Public Awareness	Support continuity of operations
O-1	Promote disaster-resistant development.	x	x	x	x		x
O-2	Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.	x	x	x		x	x
O-3	Reduce the possibility of damages to emergency facilities from natural hazards.	x	x	x			
O-4	Reduce the possibility of damage and losses due to natural hazards affecting the county and its municipalities.	x	x	x	x		x
O-5	Educate the public on the risk from natural and man-made hazards and increase their awareness of preparation, mitigation, response, and recovery activities.	x	x			x	x
O-6	Increase communications before, during, and after natural hazard events.	x	x	x	x	x	x



Obj. #	Objective Statement	Goals					
		Protect Life	Protect Property	Promote a Sustainable Economy	Protect the Environment	Increase Public Awareness	Support continuity of operations
O-7	Retrofit, acquire, or relocate vulnerable property in high hazard areas including those known to be subject to repetitive damages.	x	x	x	x		
O-8	Utilize the best available information on hazard exposure and vulnerability to support appropriate land use decisions within Burlington County.	x	x	x	x	x	x
O-9	Increase local government official awareness regarding funding opportunities for mitigation and participating/contributing to future plan updates	x	x	x		x	x

6.5 CAPABILITY ASSESSMENT

According to FEMA’s *Mitigation Planning How-To Guide #3*, a capability assessment is an inventory of a community’s missions, programs, and policies and an analysis of its capacity to carry them out. This assessment is an integral part of the planning process. The assessment process enables identification, review, and analysis of current local and state programs, policies, regulations, funding, and practices that could either facilitate or hinder mitigation.

During the original planning process, the county and participating municipalities identified and assessed their capabilities in the areas of existing programs, policies, and technical documents. By completing this assessment, each jurisdiction learned how or whether they would be able to implement certain mitigation actions by determining the following:

- Limitations that may exist on undertaking actions
- The range of local and/or state administrative, programmatic, regulatory, financial, and technical resources available to assist in implementing their mitigation actions
- Actions currently outside the scope of capabilities
- Types of mitigation actions that may be technically, legally (regulatory) administratively, politically, or fiscally challenging or infeasible
- Opportunities to enhance local capabilities to support long-term mitigation and risk reduction

During the plan update process, all participating jurisdictions were tasked with developing or updating their capability assessment, paying particular attention to evaluating the effectiveness of these capabilities in supporting hazard mitigation, and identifying opportunities to enhance local capabilities.

County and municipal capabilities in the Planning and Regulatory, Administrative and Technical, and Fiscal arenas can be found in the Capability Assessment section of each jurisdictional annex in Section 9 (Jurisdictional



Annexes). Within each annex, participating jurisdictions identified integration of hazard risk management into their existing planning, regulatory, and operational/administrative framework (“integration capabilities”) and intended integration promotion (*integration actions*). A further summary of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 7 (Plan Maintenance).

A summary of the various federal, state, county, and local planning and regulatory, administrative and technical, and fiscal programs available to promote and support mitigation and risk reduction in Burlington County are presented below.

6.5.1 Planning and Regulatory Capabilities – County and Local

Burlington County Highway Master Plan (October 2017)

Burlington County has grown by more than 50,000 residents and 25,000 jobs since the county last prepared a Highway Master Plan in 1989. An almost equal number of people and jobs are forecasted to be added by the Year 2040. The Delaware Valley Regional Planning Commission (DVRPC) was commissioned to update the Highway Master Plan to supply a vision and implementation framework for the county highway network that can sustainably complement long-term county growth patterns.

The County Route (CR) network is vital to everyday movement in the county, and it plays an important role in interconnecting with the New Jersey Turnpike and interstate highway system. The CR Network carries NJ Transit and BurLink bus routes, provides access to stations along the NJ Transit RiverLINE, and serves as a scenic route network in the Pinelands.

Burlington County Parks and Open Space Master Plan (2002)

The Burlington County Parks and Open Space Master Plan was prepared to set forth a short- and long-term strategy for the acquisition of open space and the development of a parks system that will meet the region’s recreational needs. The plan provides a vision for the communities in the county and recommended policies, actions, and strategies to be implemented by the county, local, state and federal agencies, as well as private and non-profit sectors. The plan can be viewed online: <http://www.co.burlington.nj.us/599/Future-Parks-Current-Projects>

6.5.2 Planning and Regulatory Capabilities – State and Federal

National Flood Insurance Program (NFIP)

The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968 (FEMA’s 2002 National Flood Insurance Program (NFIP): Program Description). The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. Please refer to the Flood Hazard Profile in Section 5.4.2 (Flood) for information on recent legislation related to reforms to the NFIP.

There are three components to the NFIP: flood insurance, floodplain management, and flood hazard mapping. Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary. Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage in the United States is reduced by nearly



\$1 billion each year through communities implementing sound floodplain management requirements and property owners purchasing flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance (FEMA 2008).

Thirty-nine of the 40 municipalities in Burlington County actively participate in the NFIP. The Borough of Fieldsboro does not participate in the NFIP. As of September 30, 2018, there were 3,713 NFIP policies in Burlington County. There have been 2,991 claims made, totaling over \$25.1 million for damages to structures and contents. There are 185 NFIP Repetitive Loss properties and 15 Severe Repetitive Loss properties in the county. Further details on the county's flood vulnerability can be found in the flood hazard profile in Section 5.4.4 (Flood).

The state and municipalities within the NFIP could adopt higher regulatory standards when implementing the provisions of the NFIP. Refer to Section 9 (Jurisdictional Annexes) for the NFIP standards for each participating jurisdiction. Specifically identified are the following:

Freeboard: By law, the State of New Jersey requires the lowest floor to be at least one foot above the New Jersey Flood Hazard Area Design Flood elevation. In cases where the New Jersey Flood Hazard Area Design Flood elevation does not exist, two feet above the FEMA Base Flood Elevation is required. Communities could go beyond this requirement, providing for additional freeboard.

Cumulative Substantial Improvements/Damages: The NFIP allows improvements valued at up to 50 percent of the building's pre-improvement value to be permitted without meeting the flood protection requirements. Over the years, a community could issue a succession of permits for different repairs or improvement to the same structures. This can greatly increase the overall flood damage potential for structures within a community. In New Jersey, all new construction, additions, improvements must meet current flood protection requirements. If more than 50-percent of a structure is replaced, the entire structure must meet new flood protection requirements. The community might wish to deem *substantial improvement* cumulatively so that once a threshold of improvement within a certain length of time is reached, the structure is considered to be substantially improved and must meet flood protection requirements.

NFIP Community Rating System (CRS)

As an additional component of the NFIP, the Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses, (2) facilitate accurate insurance rating, and (3) promote the awareness of flood insurance (FEMA 2012). Municipalities, and the county as a whole, could expect significant cost savings on premiums if enrolled in the CRS program.

As of October 2018, the City of Burlington (Class 7) and the Borough of Palmyra (Class 7) are actively participating in the CRS program. Other communities in Burlington County noted they explored the possibility of participating, but the program savings would not be cost-beneficial in the long run.

State of New Jersey Hazard Mitigation Plan

The State of New Jersey HMP includes an evaluation of the state's overall pre- and post-hazard mitigation policies, programs, and capabilities; the policies related to development in hazard-prone areas; and the state's funding capabilities. The State of New Jersey HMP thoroughly describes the federal and state programs available to Burlington County to promote mitigation. The State of New Jersey HMP was used as a resource in developing Burlington County's HMP update.



Critical Area Protection Policy

The following NJDEP programs both protect critical natural resources, and provide funding for the State, municipalities, and counties to purchase land for open-space preservation and recreation, which may directly or indirectly support hazard mitigation efforts:

- Green Acres Program
- Blue Acres Program
- Historical Preservation Program
- Farmland Preservation
- Wetlands Act of 1970 (N.J.S.A. 13:9A)
- Soil and Erosion and Sediment Control Act (N.J.S.A. 4:24)

The Wetlands Act of 1970 (N.J.S.A. 13:9A) provide rules and regulations governing development in wetland areas of New Jersey. New Jersey has 15 soil conservation districts, following county boundaries that implement the New Jersey Soil Erosion and Sediment Control Act (N.J.S.A. 4:24), which governs certain aspects of new development.

Land Use Planning Policy

The State of New Jersey Municipal Land Use Law (L.1975, c. 291, s. 1, effective August 1, 1976) is the legislative foundation for the land use process in the State of New Jersey, including decisions by Planning Boards and Zoning Boards of Adjustment. It defines the powers and responsibilities of boards and is essential to their functions and decisions. It also provides the required components of a municipal master plan.

Every municipal agency shall adopt and may amend reasonable rules and regulations, consistent with this act or with any applicable ordinance, for the administration of its functions, powers, and duties. These plans help jurisdictions review their land use plans and policies with public participation. The Municipal Land Use Law requires that each municipality prepare a comprehensive plan and update that plan every 10 years.

6.5.3 Administrative and Technical Capabilities – County and Local

Burlington County Department of Public Safety

Seven divisions make up the Department of Public Safety: central communications, communications support division, emergency management, emergency services training center, fire marshal, forensics department, and information technology public safety division.

Office of Emergency Management

The Burlington County Office of Emergency Management (OEM) coordinates, maintains and administers emergency management and homeland security practices, through education in the areas of mitigation, preparedness, response, recovery, detection, prevention, and protection. The Burlington County OEM assists local agencies in the establishment of their emergency operations plan, which is then sent on to the NJOEM for final approval. The Burlington County OEM also files all municipal applications for state and/or federal disaster relief funding. The Burlington County OEM is leading the 2019 HMP update. As mitigation grant funding becomes available, the Burlington County OEM distributes information to the local offices of emergency management at LEPC quarterly meetings.



The Burlington County Office of Emergency Management utilizes several services to notify the public of important and timely information. This information is disseminated by a variety of methods depending upon the type of information that is being given. The county uses Swift911 Emergency Notification System. This system is used to keep residents informed during fires, outages, floods, hurricanes, evacuations, road closures, etc. All notifications are delivered for the sole purpose of delivering emergency messages and public notifications that are time sensitive in order to increase the safety and security within Burlington County. The county also uses Nixle which keeps residents up-to-date with relevant information from local public safety departments and schools and used widely throughout Burlington County.

Register Ready is another tool Burlington County uses to allow county residents with disabilities or access and functional needs and their families, friends, caregivers and associates an opportunity to provide information to emergency response agencies so emergency responders can better plan to serve them in a disaster or other emergency.

The Office of Emergency Management division of the department provides information on their website that can assist with personal safety and preparedness efforts, and further identifies what it means to be prepared and how to do it effectively. They offer helpful guides and tools for what to do during natural and man-made hazard events and includes guidance on developing a family disaster plan. This information can be found here: <http://www.co.burlington.nj.us/452/Emergency-Preparedness>

Burlington County Department of Public Works

The Burlington County Department of Public Works is divided into five divisions: engineering, mosquito control, planning board, roads & bridges, and stormwater. Burlington County Department of Public Works Roads and Bridges Division maintains, repairs, and replaces the 364 bridges and 700 culverts throughout the county including guardrails, bridges, culverts, pipes, and dams. The division is also responsible for ice and snow removal of county roads and bridges. Additionally, the division is responsible for trimming limbs and removal of dead trees along county roads. The stormwater division maintains, inspects, and cleans the stormwater systems on county roads and within the right-of-way. The section also cleans and maintains roadside ditches on county roads. The engineering division is responsible for maintaining and improving the county's roadways and bridges including through the use of Intelligent Transportation System (ITS) technologies.

6.5.4 Administrative and Technical Capabilities – State and Federal

New Jersey State Police – Office of Emergency Management (NJOEM)

The Governor of New Jersey has the overall responsibility for emergency management activities in the state. The Superintendent of the New Jersey State Police is the State Director of the NJOEM. On behalf of the Governor, all activities and departments are coordinated, directed, and controlled from the NJOEM's Emergency Operations Center.

The State Director of Emergency Management supervises, directs, and appoints deputies and/or assistants to control the daily activities of NJOEM. The function and staffing of NJOEM is with the approval of the Attorney General. The State Hazard Mitigation Officer is the representative of state government acting as the primary point of contact with FEMA, other federal agencies, and county and local units of government in the planning and implementation of pre- and post-disaster mitigation programs and activities required under the Stafford Act.

Recovery Bureau

The Chief of the Recovery Bureau supervises the Mitigation, Public Assistance, and Finance Units. The Mitigation Unit undertakes hazard mitigation planning and the review of mitigation projects in advance of



potential disasters, and is also activated during and immediately after disasters to evaluate existing and proposed mitigation measures in the affected areas.

The Public Assistance Unit accepts and reviews applications for funds for emergency work submitted by local individuals, households, and businesses, as well as from local governments during and immediately after a disaster. The 2013 reorganization of the Recovery Bureau added a dedicated Finance Unit to support the fiscal functions of both the Public Assistance and Mitigation Units. The Finance Unit ensures timely reimbursements and fiduciary responsibility.

Mitigation Unit

The Mitigation Unit, within the Emergency Management Section, has the mission of enhancing state, county, and municipal risk reduction through the development and implementation of mitigation strategies. Hazard mitigation, by definition, is any sustained action that prevents or reduces the loss of property or human life from recurring hazards. The Mitigation Unit accomplishes this task by implementing and administering several grant-based programs in conjunction with FEMA.

Preparedness Bureau

The Preparedness Unit in the Preparedness Bureau is responsible for disseminating preparedness information in advance of a disaster or potential disaster. The Preparedness Unit maintains an extensive library of natural disaster preparedness and recovery information on its Plan and Prepare website, accessible at <http://ready.nj.gov/plan-prepare/index.shtml>. The disaster preparedness and recovery information featured prominently on the New Jersey State Police and NJOEM website home pages (<http://njsp.org/> and <http://ready.nj.gov/index.shtml>) is a critical part of New Jersey's efforts to protect public health and safety and to minimize loss of life and property in the event of a disaster.

Hazard Mitigation Grant Program Administrative Plan

In the event that an active disaster declaration has necessitated a FEMA-approved Hazard Mitigation Grant Program (HMGP) Administrative Plan, the plan is reviewed to ensure compliance with the prevailing guidance and to set forth the administrative procedures, organization, and requirements for administering the HMGP in New Jersey. The HMGP Administrative Plan is developed by the state and details the process for prioritizing post-disaster mitigation funding of local mitigation projects.

New Jersey Department of Environmental Protection

Bureau of Dam Safety & Flood Control

The Bureau of Dam Safety & Flood Control leads the state's efforts filling the State NFIP Coordinator position and providing Community Rating System (CRS) support. In addition, the section's responsibilities include the funding of construction and operation of federal, state, and local flood control mitigation projects throughout the state. The section has also taken a lead role on the development and adoption of NJ Flood Hazard Area mapping, as well as an active partnership with FEMA on their Map Modernization Program efforts. The bureau provides assistance to communities participating in the NFIP and interested in joining CRS thru the NJDEP Community Assistance Program Unit.

NJDEP Dam Safety Section

The NJDEP Dam Safety Section under the Bureau of Dam Safety & Flood Control has responsibility for overseeing dam safety in the state. In 1912, the New Jersey legislature passed a series of safety regulations



related to the construction, repair, and inspection of existing and proposed dams in the state. In 1981, the law was amended and became the Safe Dam Act, N.J.S.A. 58:4. Eventually in 1985, the Dam Safety Standards, N.J.A.C. 7:20 regulations were passed leading to the Dam Safety Section.

The primary goal of the program is to ensure the safety and integrity of dams in New Jersey and, thereby, protect people and property from the consequences of dam failures. The section also coordinates with the Division of State Police, local and county emergency management officials in the preparations and approval of emergency action plans.

The Dam Safety Section reviews plans and specifications for the construction of new dams or for the alteration, repair, or removal of existing dams. The section must grant approval before the owner can proceed with construction. Engineers from the Dam Safety Section evaluate each project, investigate site conditions, and check recommended construction materials. During construction, engineers identify conditions that may require design changes, check for compliance with approved plans and specifications, and approve foundations before material is placed.

Existing dams are periodically inspected to assure that they are adequately maintained and owners are directed to correct any deficiencies found. The regulations require the owner to obtain a professional engineer to inspect their dams on a regular basis. These investigations include a comprehensive review of all pertinent material contained in the Section's files, a visual inspection, technical studies when necessary, and the preparation of a comprehensive report (NJDEP 2012a).

The owners or operators of all dams which raise the waters of any stream more than 70 feet above its usual mean low-water height or which impound more than 10,000 acre-feet of water shall have a regular inspection performed annually and formal inspections performed every three years by a New Jersey licensed professional engineer obtained by the owner. In addition, these inspections must be attended by a professional engineer assigned from the NJDEP.

Division of Water Supply and Geoscience

The Division of Water Supply and Geoscience (Water Supply) works to ensure adequate, reliable and safe water supply is available for the future. This goal is accomplished through the regulation of ground and surface water diversions, permitting of wells, permitting of drinking water infrastructure, monitoring of drinking water quality and technical support for water systems to achieve compliance with all federal and state standards. In addition, Water Supply staff act in a support role during an emergency situation to provide technical assistance, as needed to re-establish safe and adequate public water supplies.

Water Supply staff provides technical assistance to assist water systems during water supply emergencies and to address routine non-compliance from significant deficiencies or poor water quality test results. The Drinking Water State Revolving Fund (DWSRF) program assists water systems in financing the cost of infrastructure through the use of federal and New Jersey Infrastructure Trust funds. Additionally, Water Supply provides operator licensing and training support as well as financial assistance through the DWSRF program.

Water Resource Management

The Water Pollution Management Element is responsible for protecting New Jersey's surface and ground waters from pollution caused by improperly treated wastewater and its residuals. This is accomplished primarily through the implementation of the New Jersey Pollutant Discharge Elimination System (NJPDES) permit program. This includes publicly owned treatment facilities (e.g. sanitary sewerage plants) and privately owned facilities (e.g. industrial facilities) as well as facilities that discharge stormwater (e.g. municipalities and highway agencies) and stormwater related to development. The NJPDES program also regulates discharges to ground water (e.g.



septic systems) and the proper management of any residuals that are generated as part of the treatment process. The varied ownership of infrastructure components is often a complicating factor in the regulation of these entities (e.g. ownership of a treatment facility by a public entity and sewer mains by a different municipal entity). The total universe of NJPDES permits includes over 7,500 permits. The Water Pollution Management Element engineering and environmental specialist staff provide technical assistance in the development, interpretation and implementation of permit conditions.

New Jersey Geological and Water Survey

The New Jersey Geological and Water Survey evaluates geologic, hydrogeologic and water quality data to manage and protect water resources, to identify natural hazards and contaminants, and to provide mineral resources including offshore sands for beach nourishment. Information provided by the survey includes GIS data and maps of geology, topography, groundwater and aquifer recharge. In addition the data tracks wellhead protection areas, aquifer thicknesses, properties and depths, groundwater quality, drought, geologic resources, and hazards such as earthquakes, abandoned mines, karst-influenced sinkholes and landslides.

New Jersey Department of the State - Office of Planning Advocacy (OPA) - Business Action Center

The New Jersey Office of Planning Advocacy (OPA) supports and coordinates planning throughout the state to protect the environment, mitigate development hazards and guide future growth into compact, mixed use development and redevelopment while fostering a robust long-term economy. The OPA implements the goals of the State Development and Redevelopment Plan to achieve comprehensive, long-term planning; and integrates that planning with programmatic and regulatory land use decisions at all levels of government and the private sector.

Rutgers University

Office of the New Jersey's State Climatologist

The Office of the New Jersey's State Climatologist (ONJSC) generates and archives climate data. Generated data are from the New Jersey Weather and Climate Network (NJWxNet), which is an assemblage of 55 automated weather stations situated throughout the state. A decade or more of hourly observations are available from some of the stations, while others have shorter records. Since fall 2012 observations are available on a five-minute basis.

Along with these records, ONJSC archives or has ready access to National Weather Service (NWS) Cooperative Weather Station data. These are daily observations from several dozen stations at any given time over the past century. Individual stations have as many as 120 years of data while other stations have started or ceased operating since the late 1800s. Another source of generated data is the Community Collaborative Rain, Hail and Snow Network (CoCoRaHS), which includes daily observations of rain and snow from as many as several hundred volunteers throughout the state.

New Jersey Climate Adaptation Alliance

The New Jersey Climate Adaptation Alliance (NJADAPT) was formed in response to a diverse group of stakeholders who came together on November 29, 2011, at Rutgers University to participate in the conference "Preparing New Jersey for Climate Change: A Workshop for Decision-Makers".

The Alliance focuses on climate change preparedness for New Jersey in key impact sectors (public health; watersheds, rivers and coastal communities; built infrastructure; agriculture; and natural resources) through:



- Conducting outreach and education of the general public and targeted sectoral leaders
- Developing recommendations for state and local actions through collaboration with policymakers at the state, federal and local levels
- Undertaking demonstration and pilot projects in partnership with the private sector, local governments, non-governmental organizations, and others
- Identifying science, research and data needs
- Developing capacity for implementation of preparedness measures and documentation of best practices (Rutgers University 2018)

NJADAPT is a collaborative effort of scientists and data managers in academia, government, the private sector and non-governmental organization community who have developed a strategic plan for a New Jersey platform to host and apply climate science impacts and data. The NJADAPT website includes a flood exposure profile for community discussions about hazard impacts; NJ Flood Mapper (which is a tool for flooding hazards and sea level rise); and Getting to Resilience (a tool used to help communities reduce vulnerability and increase preparedness). NJADAPT can be accessed at <http://www.njadapt.org/>

6.5.5 Fiscal Capabilities – County and Local

Local Open Space Preservation Land Grant Program

Burlington County awards grants to municipalities and non-profit organizations to assist in the preservation of locally important open space, connected, recreational paths and greenways, woodlands, stream corridors, active or passive recreational areas, and environmentally sensitive areas such as wildlife habitat, floodprone areas, and wetland buffers. However, this program does not fund projects related to permanent protection of agricultural land (Burlington County Department of Parks 2002).

The program is funded a county trust fund and provides cost share funding toward the purchase price of a parcel of land, helping local governments leverage their own local open space tax dollars (Burlington County Department of Parks 2002).

Burlington County Open Space Trust Fund

The trust fund is supported by a dedicated tax of four cents per \$100 of assessed valuation in any given year. This funding is estimated at about \$8.6 million per year. The following 14 municipalities also have open space trust funds supported by a dedicated tax: Bordentown Township, Eastampton, Edgewater Park, Evesham, Hainesport, Lumberton, Mansfield, Medford, Moorestown, Mt. Laurel, North Hanover, Southampton, Springfield and Westampton.

6.5.6 Fiscal Capabilities – State and Federal

Federal Hazard Mitigation Funding Opportunities

Federal mitigation grant funding is available to all communities with a current HMP (this plan); however most of these grants require a “local share” in the range of 10-25 percent of the total grant amount. Details about grant programs and further descriptions of these opportunities can be found at: <https://www.fema.gov/hazard-mitigation-assistance>. The FEMA mitigation grant programs are described below.

Hazard Mitigation Grant Program (HMGP)

The HMGP is a post-disaster mitigation program. FEMA makes these grants available to states by after each federal disaster declaration. The HMGP can provide up to 75 percent funding for hazard mitigation measures



and can be used to fund cost-effective projects that will protect public or private property or that will reduce the likely damage from future disasters in an area covered by a federal disaster declaration. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood-proofing or elevation to reduce future damage, minor structural improvements, and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved HMP (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to NJOEM, placed in rank order for available funding, and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and could be considered as additional HMGP funding becomes available.

Additional information regarding the HMGP is available on the FEMA website: <https://www.fema.gov/hazard-mitigation-grant-program>.

Flood Mitigation Assistance (FMA) Program

The FMA program combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. The FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP insured homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is at least 75 percent. For the non-federal share, at most 25 percent of the total eligible costs must be provided by a non-federal source; of this 25 percent, no more than half can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. The FMA funds are distributed from FEMA to the state. NJOEM serves as the grantee and program administrator for the FMA program.

The FMA program is detailed on the FEMA website: <https://www.fema.gov/flood-mitigation-assistance-grant-program>

Pre-Disaster Mitigation (PDM) Program

The PDM program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover 75 percent of a project's cost up to \$3 million. As with the HMGP and FMA, a FEMA-approved local HMP is required to be approved for funding under the PDM program.

In some cases, whereby the local HMP is under development, but not formally approved by FEMA, the jurisdiction can request a Letter of Extraordinary Circumstance to enable consideration of the grant application. According to the FEMA Hazard Mitigation Assistance Guidance (2015), for Hazard Mitigation Grant Program (HMGP) project subawards, the FEMA Regional Administrator might grant an exception to the local mitigation plan requirement in extraordinary circumstances when justification is provided. If this exception is granted, a local mitigation plan must be approved by FEMA within 12 months of the award of the project subaward to that community. For Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) project subawards, the FEMA Region could grant an exception to the local mitigation plan requirement in extraordinary circumstances.

The PDM program is detailed on the FEMA website: <https://www.fema.gov/pre-disaster-mitigation-grant-program>.



Extraordinary Circumstances

For PDM and FMA project subawards, the FEMA Region might apply extraordinary circumstances when justification is provided and with concurrence from FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) prior to granting an exception. If this exception is granted, a local mitigation plan must be approved by FEMA within 12 months of the award of the project subaward to that community.

For HMGP, PDM, and FMA, extraordinary circumstances exist when a determination is made by the applicant and FEMA that the proposed project is consistent with the priorities and strategies identified in the State (Standard or Enhanced) Mitigation Plan and that the jurisdiction meets at least one of the criteria below. If the jurisdiction does not meet at least one of these criteria, the region must coordinate with FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) for HMGP; however, for PDM and FMA the region must coordinate and seek concurrence prior to granting an exception. The criteria are as follows:

- The jurisdiction meets the small impoverished community criteria (see Part VIII, B.2 of HMA Unified Guidance).
- The jurisdiction has been determined to have had insufficient capacity due to lack of available funding, staffing, or other necessary expertise to satisfy the mitigation planning requirement prior to the current disaster or application deadline.
- The jurisdiction has been determined to have been at low risk from hazards because of low frequency of occurrence or minimal damage from previous occurrences as a result of sparse development.
- The jurisdiction experienced significant disruption from a declared disaster or another event that impacts its ability to complete the mitigation planning process prior to award or final approval of a project award.
- The jurisdiction does not have a mitigation plan for reasons beyond the control of the state, federally-recognized tribe, or local community, such as Disaster Relief Fund restrictions that delay FEMA from granting a subaward prior to the expiration of the local or tribal mitigation plan.

For HMGP, PDM, and FMA, the applicant must provide written justification that identifies the specific criteria or circumstance listed above, explains why there is no longer an impediment to satisfying the mitigation planning requirement, and identifies the specific actions or circumstances that eliminated the deficiency.

When an HMGP project funding is awarded under extraordinary circumstances, the recipient shall acknowledge in writing to the Regional Administrator that a plan will be completed within 12 months of the subaward. The recipient must provide a work plan for completing the local or tribal mitigation plan, including milestones and a timetable, to ensure that the jurisdiction will complete the plan in the required time. This requirement shall be incorporated into the award (both the planning and project subaward agreements, if a planning subaward is also awarded).

Federal and State Disaster and Recovery Assistance Programs

Following a disaster, various types of assistance could be made available by local, state, and federal governments. The types and levels of disaster assistance depend on the severity of the damage and the declarations that result from the disaster event. The following sections detail the general types of assistance that might be provided should the President of the United States declare the event a major disaster.

Individual Assistance (IA)

Individual Assistance (IA) provides help for homeowners, renters, businesses, and some non-profit entities after disasters occur. This program is largely funded by the U.S. Small Business Administration. For homeowners and renters, those who suffered uninsured or underinsured losses could be eligible for a Home Disaster Loan to repair or replace damaged real estate or personal property. Renters are eligible for loans to cover personal



property losses. Individuals are allowed to borrow up to \$200,000 to repair or replace real estate, \$40,000 to cover losses to personal property, and an additional 20 percent for mitigation. For businesses, loans could be made to repair or replace disaster damages to property owned by the business, including real estate, machinery and equipment, inventory, and supplies. Businesses of any size are eligible. Non-profit organizations, such as charities, churches, and private universities are eligible. An Economic Injury Disaster Loan provides necessary working capital until normal operations resume after a physical disaster but are restricted by law to small businesses only. IA is detailed on the FEMA website: <https://www.fema.gov/individual-disaster-assistance>.

Public Assistance (PA)

Public Assistance (PA) provides cost reimbursement aid to local governments (state, county, local, municipal authorities, and school districts) and certain non-profit agencies that were involved in disaster response and recovery programs or that suffered loss or damage to facilities or property used to deliver government-like services. This program is largely funded by FEMA with both local and state matching contributions required. PA is detailed on the FEMA website: <https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit>.

Small-Business Administration (SBA) Loans

SBA provides low-interest disaster loans to homeowners, renters, business of all sizes, and most private nonprofit organizations. SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.

Homeowners could apply for up to \$200,000 to replace or repair their primary residence. Renters and homeowners could borrow up to \$40,000 to replace or repair personal property-such as clothing, furniture, cars, and appliances that were damaged or destroyed in a disaster. Physical disaster loans of up to \$2 million are available to qualified businesses or most private nonprofit organizations. Additional information regarding SBA loans is available on the SBA website: <https://www.sba.gov/managing-business/running-business/emergency-preparedness/disaster-assistance>.

Social Services Block Grant Program (SSBG)

To address the needs of critical health and human service providers and the populations they serve, the State of New York will receive a total of \$235.4 million in federal Superstorm Sandy SSBG funding. The state will distribute \$200,034,600 through a public and transparent solicitation for proposals and allocate \$35.4 million in State Priority Projects, using the SSBG funding. Sandy SSBG resources are dedicated to covering necessary expenses resulting from Superstorm Sandy, including social, health, and mental health services for individuals, and for repair, renovation, and rebuilding of health care facilities, mental hygiene facilities, child care facilities, and other social services facilities. Additional information regarding the SSBG program is available on the website: <https://www.acf.hhs.gov/ocs/programs/ssbg>.

Department of Homeland Security Grant Program (HSGP)

The HSGP plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation. The FY 2017 HSGP supports efforts to build and sustain core capabilities across the Prevention, Protection, Mitigation, Response, and Recovery mission areas. This includes two priorities: building and sustaining law enforcement terrorism prevention capabilities and maturation and enhancement of state and major urban area fusion centers (HSGP 2017). HSGP is comprised of three interconnected grant programs including the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), and the Operation Stonegarden (OPSG). Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration.



Additional information regarding HSGP is available on the website: <https://www.fema.gov/homeland-security-grant-program>.

Community Development Block Grants (CDBG)

CDBG are federal funds intended to provide low and moderate-income households with viable communities, including decent housing, a suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, and planning and administration. Public improvements could include flood and drainage improvements. In limited instances and during the times of “urgent need” (e.g., post disaster) as defined by the CDBG National Objectives, CDBG funding could be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event. Additional information regarding CDBG is available on the website: <https://www.hudexchange.info/programs/cdbg-entitlement/>.

U.S. Economic Development Administration

The U.S. Economic Development Administration (USEDA) is an agency of the U.S. Department of Commerce that supports regional economic development in communities around the country. It provides funding to support comprehensive planning and makes strategic investments that foster employment creation and attract private investment in economically distressed areas of the United States. Through its Public Works Program, USEDA invests in key public infrastructure, such as traditional public works projects, including water and sewer systems improvements, expansion of port and harbor facilities, brownfields, multitenant manufacturing and other facilities, business and industrial parks, business incubator facilities, redevelopment technology-based facilities, telecommunications facilities, and development facilities. Through its Economic Adjustment Program, USEDA administers its Revolving Loan Fund Program, which supplies small businesses and entrepreneurs with the gap financing needed to start or expand their business in areas that have experienced or are under threat of serious structural damage to the underlying economic base. Additional information is available on the USED A website: <https://www.eda.gov/>.

Federal Highway Administration - Emergency Relief

The Federal Highway Administration Emergency Relief is a grant program that can be used for repair or reconstruction of Federal-aid highways and roads on Federal lands which have suffered serious damage as a result of a disaster. New Jersey serves as the liaison between local municipalities and FHWA. \$30 Million in funding was released in October-November of 2012 for emergency repair work conducted in first 180 days following Hurricane Sandy. Another \$220 Million in additional funding became available February 2013. For information regarding the FHWA Emergency Relief Program, please refer to: <https://www.fhwa.dot.gov/programadmin/erelief.cfm>

Federal Transit Administration - Emergency Relief

The Federal Transit Authority Emergency Relief is a grant program that funds capital projects to protect, repair, reconstruct, or replace equipment and facilities of public transportation systems. Administered by the Federal Transit Authority at the U.S. Department of Transportation and directly allocated to MTA and Port Authority, this transportation-specific fund was created as an alternative to FEMA PA. Currently, a total of \$5.2 Billion has been allocated to New Jersey-related entities. Additional information regarding the FTA Emergency Relief Program is available on the website: <https://www.transit.dot.gov/funding/grant-programs/emergency-relief-program/emergency-relief-program>.



New Jersey Green Acres Program

The Green Acres Program was created in 1961 to meet New Jersey's growing recreation and conservation needs. The program is committed to preserve the natural, historic, and cultural heritage of New Jersey. Hundreds of thousands of acres of conservation and recreation lands have been preserved, and hundreds of public parks have been developed with Green Acres funds (NJDEP 2019). The program administers four basic land preservation programs:

- State acquisition program (land preservation initiated by the state);
- Grants/Loans to municipal and county governments (to assist in specific land preservation and recreational development projects);
- Planning Incentive Grants program (provides grants/loans to county and municipal governments to fund preservation of land included in a detailed local open space preservation plan); and
- Nonprofit matching grants program (Green Acres provides nonprofit organization with a matching grant to help fund fee simple, easement purchases, or recreational development).

In Burlington County, the Green Acres Program offers up to 100-percent of a project's cost through grants and loans. Municipalities with a dedicated tax have the potential to receive a 50-percent grant from the Green Acres Program for each approved project location. The county encourages municipalities to apply for Green Acres funds to further leverage local and county preservation dollars. As of February 2019, Burlington County has a total of over 380 parks and open space areas funded through the Green Acres Program (Burlington County Department of Parks 2002).

New Jersey Environmental Infrastructure Trust (NJEIT)

The New Jersey Environmental Infrastructure Trust (NJEIT) is an independent state financing authority that provides low-interest rate loans to qualified borrowers in New Jersey for water quality and infrastructure projects. The NJEIT, partnering with NJDEP, offers short-term financing (bridge loans) and long-term disaster-recovery loan assistance.

New Jersey Economic Development Authority (NJEDA)

The New Jersey Economic Development Authority (NJEDA) is an independent state agency that provides tax incentives to foster development and employment growth and retention, financing for small and mid-sized businesses, revitalizes communities through redevelopment initiatives, and supports entrepreneurial development by providing access to training and mentoring programs. With its large portfolio of some 30 varied programs and services, NJEDA can assist businesses, non-profits and developers to access capital, including tax-exempt and taxable bond financing, loans, loan guarantees, and business and tax incentives.

New Jersey Redevelopment Authority (NJRA)

The New Jersey Redevelopment Authority (NJRA) is an independent state financing authority committed exclusively to the redevelopment of New Jersey's urban areas. NJRA offers several financing resources including site acquisition funding, predevelopment assistance, several development assistance resources, and technical assistance.

New Jersey Housing and Mortgage Finance Agency (NJHMFA)

The New Jersey Housing and Mortgage Finance Agency (NJHMFA) is an independent state financing authority that provides affordable home ownership and housing opportunities for New Jersey residents by funding affordable home mortgages for first-time home buyers, promoting construction and rehabilitation of rental housing, and encouraging mixed-income owner-occupied housing growth. NJHMFA provides low-interest



financing and administers low-income housing tax credits for the State of New Jersey’s low and moderate income communities.

New Jersey Department of Community Affairs (NJCA)

The New Jersey Department of Community Affairs (NJCA) is a state agency created to provide administrative guidance, financial support, and technical assistance to local governments, community development organizations, businesses, and individuals to improve the quality of life in New Jersey. NJCA offers a wide range of programs, funding, and services that respond to issues of public concern including fire and building safety, housing production, community planning and development, and local government management and finance. Among other funding sources, NJCA administers CDBG funding and is typically the CDBG-DR funding recipient for the State of New Jersey.

New Jersey Department of Environmental Protection Grant and Loan Programs

NJDEP offers a wide variety of funding opportunities for local governments and other types of organizations to fund numerous environmentally based projects. This includes funding for: air quality, energy, and sustainability; compliance and enforcement; engineering and construction; land use management; local government assistance; natural and historic resources; site remediation and waste management programs; and water resource management. Information on each of the programs can be found on the NJDEP website: <https://www.nj.gov/dep/grantandloanprograms/>

6.6 MITIGATION STRATEGY DEVELOPMENT AND UPDATE

6.6.1 Update of Municipal Mitigation Strategies

To evaluate progress on local mitigation actions, each municipality with actions in previous DMA 2000 or related plans, including those who participated in the 2014 HMP, was provided with a Mitigation Action Plan Review Worksheet. Each worksheet was pre-populated with those actions identified for their jurisdiction in the prior plan. For each action, municipalities were asked to indicate the status of each action (*No Progress/Unknown, In Progress/Not Yet Complete, Ongoing Capability, Completed, or Discontinued*), and provide review comments on each. Municipalities were requested to quantify the extent of progress, and provide reasons for the level of progress or why actions were discontinued. Each jurisdictional annex provides a table identifying their prior mitigation strategy, the status of those actions and initiatives, and their disposition within their updated strategy.

Local mitigation actions identified as *Complete*, and those actions identified as *Discontinued*, have been removed from the updated strategies. Those local actions that municipalities identified as *No Progress/Unknown, In Progress/Not Yet Complete*, as well as certain actions/initiatives identified as *Continuous* or *Ongoing Capability*, have been carried forward in their jurisdiction’s updated mitigation strategies if still deemed appropriate and a priority. Municipalities were asked to provide further details on these projects to help better define the projects, identify benefits and costs, and improve implementation.

Certain continuous or ongoing strategies represent programs that are, or since the 2014 HMP have become, fully integrated into the normal operational and administrative framework of the community. Such programs and initiatives have been identified within the Capabilities section of each annex, and removed from the updated mitigation strategy.

At the Kick-Off and during subsequent local-level planning meetings, all participating municipalities were further surveyed to identify mitigation activities completed, ongoing, and potential/proposed. As new additional potential mitigation actions, projects, or initiatives became evident during the plan update process, including as



part of the risk assessment update and as identified through the public and stakeholder outreach process detailed in Section 3 (Planning Process), communities were made aware of these either through direct communication (local meetings, email, phone) or via their draft municipal annexes.

To help support the selection of an appropriate, risk-based mitigation strategy, each annex provided a summary of hazard vulnerabilities identified during the plan update process, either directly by municipal representatives or through review of available county and local plans and reports, and through the hazard profiling and vulnerability assessment process.

Beginning in September 2017, members of the Planning Committee and the planning consultant worked directly with each community (phone, email, local support meetings) to assist with the development and update of their annex and include mitigation strategies, focusing on identifying well-defined, implementable projects with a careful consideration of benefits (risk reduction, losses avoided), costs, and possible funding sources (including mitigation grant programs).

Concerted efforts were made to assure that municipalities develop updated mitigation strategies that included activities and initiatives covering the range of mitigation action types described in recent FEMA planning guidance (FEMA's *Local Mitigation Planning Handbook* March 2013). This specifically includes:

- **Local Plans and Regulations** – These actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.
- **Structure and Infrastructure Projects** – These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct man-made structures to reduce the impact of hazards.
- **Natural Systems Protection** – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- **Education and Awareness Programs** – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as the NFIP and CRS, StormReady (NOAA) and Firewise (NFPA) Communities.

A mitigation strategy workshop was conducted by NJOEM and FEMA Region II representatives on March 1, 2018 for all participating jurisdictions to support the identification, evaluation, and prioritization of local mitigation strategies, as well as how to present and document this process within the plan. The following significant modifications to the mitigation strategy identification, update, and documentation process were made:

- An overarching effort has been made to better focus local mitigation strategies to clearly defined, readily actionable projects and initiatives that meet the definition or characteristics of mitigation.
- Per NJOEM's advice, broadly defined mitigation objectives were maintained if the community felt it were appropriate to ensure eligibility in the future. For example, if a community has numerous RL properties however specific projects/property-owner interest is not solidified at this time, a general action was maintained to ensure future eligibility.
- Certain continuous or ongoing strategies that represent programs that are, or since the 2014 HMP have become, fully integrated into the normal operational and administrative framework of the community have been identified within the Capabilities section of each annex, and removed from the updated mitigation strategy.



- Where applicable, mitigation projects have been documented with an action worksheet, based on FEMA’s Action Worksheet templates and within recent guidance documents. These action worksheets and prioritization tables appear at the end of each jurisdiction’s annex.

Overall a comprehensive-range of specific mitigation initiatives were considered by each plan participant to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected. Table 6-3 lists the common mitigation actions identified across a majority of the communities.

Table 6-2. Comprehensive Range of Mitigation Actions

Jurisdiction	Preventative	Property Protection	Natural Resource Protection	Emergency Services	Structural Projects	Public Information
Burlington County	X	X	X	X	X	X
Township of Bass River	X	X		X	X	X
City of Beverly	X	X	X	X	X	X
City of Bordentown	X	X	X	X	X	X
Township of Bordentown	X	X	X	X	X	X
City of Burlington	X	X	X	X	X	X
Township of Burlington	X	X			X	X
Township of Chesterfield	X	X		X		X
Township of Cinnaminson	X	X	X	X	X	X
Township of Delanco	X	X	X	X	X	X
Township of Delran	X	X	X	X		X
Township of Eastampton	X	X	X	X	X	X
Township of Edgewater Park	X		X	X	X	X
Township of Evesham	X	X	X	X		X
Borough of Fieldsboro	X			X		X
Township of Florence	X	X		X	X	X
Township of Hainesport	X	X		X		X
Township of Lumberton	X	X	X		X	X
Township of Mansfield	X			X		X
Township of Maple Shade	X	X				X
Township of Medford	X	X	X	X	X	X
Borough of Medford Lakes	X	X			X	X
Township of Moorestown	X	X				X



Jurisdiction	Preventative	Property Protection	Natural Resource Protection	Emergency Services	Structural Projects	Public Information
Township of Mount Holly	X	X		X	X	X
Township of Mount Laurel	X	X		X	X	X
Township of New Hanover	X			X		X
Township of North Hanover	X	X		X	X	X
Borough of Palmyra		X			X	
Borough of Pemberton	X			X	X	X
Township of Pemberton	X	X			X	X
Township of Riverside	X	X	X	X	X	X
Borough of Riverton		X		X		
Township of Shamong	X	X		X		X
Township of Southampton	X	X	X	X	X	
Township of Springfield	X	X				X
Township of Tabernacle	X	X				X
Township of Washington	X	X		X	X	X
Township of Westampton	X	X			X	X
Township of Willingboro	X			X		X
Township of Woodland	X	X		X		X
Borough of Wrightstown	X	X				

6.6.2 Strengths, Weaknesses, Opportunities, and Obstacles (SWOO)

In March 2018, one Strengths, Weaknesses, Opportunities, and Obstacles (SWOO) session was held with the Planning Committee. The purpose of this session was to identify strengths, weaknesses, opportunities and obstacles in hazard mitigation within Burlington County through a facilitated brainstorming session on risks, vulnerabilities, and capabilities. These meetings were the basis for considering and selecting mitigation actions.

All information shared during these sessions were recorded and used to prepare a catalog representing a comprehensive range of mitigation alternatives to be used by the Planning Committee in preparing their individual jurisdictional annexes, as well as complying with Step 7 of the CRS 10-step process. Many of the strategies (such as community outreach) identified in the catalog could be applied to multiple hazards. This 2019 HMP update identifies strategies for multiple hazards for Burlington County and each jurisdictional annex for participating jurisdictions (Section 9).

The Planning Committee generated a mitigation catalog which includes a comprehensive list of mitigation actions (see Appendix H – Mitigation Catalog) to be considered that met the following objectives:

- Use information obtained from the public involvement strategy
- Use information provided in the risk assessment
- Seek mitigation actions consistent with the goals and objectives for the Burlington County HMP



- Create catalogs of mitigation actions to be used as a tool by the Planning Committee in selection of mitigation actions

Catalog of Mitigation Alternatives

Based on information gathered during the SWOO session, a catalog of mitigation alternatives was created listing initiatives that could manipulate the hazard, reduce exposure to the hazard, reduce vulnerability to the hazard, and to increase the ability to respond to or be prepared for a hazard (Appendix F). In addition, the catalog indicates responsibility for implementation (i.e., who would most likely implement the initiative: personal property owners, private sector business, or government) and what the alternative would accomplish. Based on the risk assessment, the hazards included in the catalog are deemed to be those to which the planning area is most vulnerable.

The catalog is not meant to be exhaustive or site-specific but rather to inspire thought and provide members of the Planning Committee a baseline of initiatives backed by a planning process, consistent with the goals and objectives of the planning area, and within the capabilities of the participants. The Planning Committee was not bound to these actions. They had the opportunity to add further actions subsequent to the SWOO workshops. Actions in the catalog that were not selected by the partners to include in their jurisdictional annexes were not selected based on the following:

- Action is currently outside the scope of capabilities (funding)
- The jurisdiction is not vulnerable to the hazard
- Action is already being implemented

All proposed mitigation actions were identified in relation to the goals and objectives presented above. The mitigation actions include a range of options in line with the four types of mitigation actions described in FEMA guidance (FEMA's *Local Mitigation Planning Handbook* March 2013); discussed further below.

6.6.3 Update of County Mitigation Strategies

The update of the county-level mitigation strategies included a review of progress on the actions/initiatives identified in the 2013 HMP using a process similar to that used to review municipal mitigation strategy progress. The county, through their various department representatives, was provided with a Mitigation Action Plan Review Worksheet identifying all county-level actions and initiatives from the 2014 plan. The county reviewed each action and provided progress. For each action, relevant county representatives were asked to indicate the status of each action (*No Progress/Unknown*, *In Progress/Not Yet Complete*, *Continuous*, *Completed*, or *Discontinued*), and provide review comments on each.

Projects/initiatives identified as “*Complete*”, as well as those actions identified as *Discontinued*, have been removed from this plan update. Those actions the county has identified as *No Progress/Unknown*, *In Progress/Not Yet Complete*, or *Continuous* have been carried forward in the county's updated mitigation strategy. Actions considered ongoing capabilities were marked as *Discontinued* and included in the plan as ongoing capabilities.

Throughout the course of the 2019 HMP update process, additional regional and county mitigation actions have been identified. These were identified through:

- Review of the results and findings of the updated risk assessment
- Review of the findings of the SWOO
- Review of available regional and county plans, reports, and studies



- Direct input from county departments, including:
 - Department of Public Safety’s Office of Emergency Management
 - Department of Public Works - Engineering
 - Department of Planning

6.6.4 Mitigation Strategy Evaluation and Prioritization

Section 201.6(c)(3)(iii) of the 44 CFR requires an action plan describing how the identified actions will be prioritized. Recent FEMA planning guidance (March 2013) identifies a modified Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) mitigation action evaluation methodology that uses a set of 10 evaluation criteria suited to the purposes of hazard mitigation strategy evaluation. This method provides a systematic approach that considers the opportunities and constraints of implementing a particular mitigation action.

Based on this guidance, the Steering and Planning Committees have developed and applied an action evaluation and prioritization methodology which includes an expanded set of 14 criteria to include the consideration of cost-effectiveness, availability of funding, anticipated timeline, and if the action addresses multiple hazards.

The 14 evaluation/prioritization criteria used in the 2019 HMP update process are:

- 1) Life Safety – How effective will the action be at protecting lives and preventing injuries?
- 2) Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?
- 3) Cost-Effectiveness – Are the costs to implement the project or initiative commensurate with the benefits achieved?
- 4) Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.
- 5) Political – Is there overall public support for the mitigation action? Is there the political will to support it?
- 6) Legal – Does the municipality have the authority to implement the action?
- 7) Fiscal – Can the project be funded under existing program budgets (i.e., is this initiative currently budgeted for)? Or would it require a new budget authorization or funding from another source such as grants?
- 8) Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?
- 9) Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
- 10) Administrative – Does the jurisdiction have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
- 11) Multi-hazard – Does the action reduce the risk to multiple hazards?
- 12) Timeline – Can the action be completed in less than 5 years (within our planning horizon)?
- 13) Local Champion – Is there a strong advocate for the action or project among the jurisdiction’s staff, governing body, or committees that will support the action’s implementation?
- 14) Other Local Objectives – Does the action advance other local objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of other plans and programs?



Participating jurisdictions were asked to use these criteria to assist them in evaluating and prioritizing all mitigation actions identified in the 2019 HMP update (previously identified actions that were carried forward and new mitigation actions). Specifically, for each mitigation action, the jurisdictions were asked to assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria, defined as follows:

- 1 Highly effective or feasible
- 0 Neutral
- -1 Ineffective or not feasible

Further, jurisdictions were asked to provide a brief summary of the rationale behind the numeric rankings assigned, as applicable. The numerical results of this exercise were then used by each jurisdiction to help prioritize the action or strategy as *Low*, *Medium*, or *High*. While this provided a consistent, systematic methodology to support the evaluation and prioritization of mitigation actions, jurisdictions may have additional considerations that could influence their overall prioritization of mitigation actions.

For the 2019 HMP update there has been an effort to develop more clearly defined and action-oriented mitigation strategies. These local strategies include projects and initiatives that have been well-vetted, and are seen by the community as the most effective approaches to advance their local mitigation goals and objectives within their capabilities. As such, many of the initiatives in the updated mitigation strategy were ranked as *High* or *Medium* priority, as reflective of the community's clear intent to implement, available resources notwithstanding. In general, initiatives that would have had *Low* priority rankings were appropriately screened out during the local action evaluation process.

6.6.5 Benefit/Cost Review

Section 201.6(c)(3)(iii) of the 44 CFR requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a benefit/cost review of the proposed projects and their associated costs. Stated otherwise, cost-effectiveness is one of the criteria that must be applied during the evaluation and prioritization of all actions comprising the overall mitigation strategy.

The benefit/cost review applied for the evaluation and prioritization of projects and initiatives in this 2019 HMP update process was qualitative; that is, it does not include the level of detail required by FEMA for project grant eligibility under the Hazard Mitigation Assistance grant programs. For all actions identified in the local strategies, jurisdictions have identified both the costs and benefits associated with a project, action, or initiative.

Costs are the total cost for the action or project, and may include administrative costs, construction costs (including engineering, design and permitting), and maintenance costs.

Benefits are the savings from losses avoided attributed to the implementation of the project, and may include life-safety, structure and infrastructure damages, loss of service or function, and economic and environmental damage and losses.

When available, jurisdictions were asked to identify the actual or estimated dollar value for project costs and associated benefits. Having defined costs and benefits allows a direct comparison of benefits versus costs, and a quantitative evaluation of project cost-effectiveness. Often, however, numerical costs and/or benefits have not been identified, or may be impossible to quantitatively assess.

For the purposes of this planning process, jurisdictions were tasked with evaluating project cost-effectiveness with both costs and benefits assigned to "High," "Medium," and "Low" ratings. Where quantitative estimates of costs and benefits were available, ratings/ranges were defined as:



- Low < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where quantitative estimates of costs and/or benefits were not available, qualitative ratings using the definitions presented in Table 6-6 were used.

Table 6-3. Qualitative Cost and Benefit Ratings

Costs	
High	Existing funding levels are not adequate to cover the costs of the proposed project, and implementation would require an increase in revenue through an alternative source (e.g., bonds, grants, and fee increases).
Medium	The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
Low	The project could be funded under the existing budget. The project is part of or can be part of an existing, ongoing program.
Benefits	
High	Project will have an immediate impact on the reduction of risk exposure to life and property.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property or will provide an immediate reduction in the risk exposure to property.
Low	Long-term benefits of the project are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly. The action plan was prioritized according to the benefit/cost analysis, funding availability and the immediacy of the need for each project (CRS Step 8).

For some of the Burlington County initiatives identified, the Planning Committee may seek financial assistance under FEMA’s HMGP or HMA programs. These programs require detailed benefit/cost analysis as part of the application process. These analyses will be performed when funding applications are prepared, using the FEMA benefit/cost analysis model process. The Planning Committee is committed to implementing mitigation strategies with benefits that exceed costs. For projects not seeking financial assistance from grant programs that require this sort of analysis, the Planning Committee reserves the right to define “benefits” according to parameters that meet its needs and the goals and objectives of this HMP.