



9.1 ESSEX COUNTY

This section presents the jurisdictional annex for Essex County. The annex includes a general overview of the County; an assessment of Essex County's risk, vulnerability, and mitigation capabilities; and a prioritized action plan to implement prior to a disaster to reduce future losses and achieve greater resilience to hazards.

9.1.1 Hazard Mitigation Planning Team

The following individuals are Essex County's identified HMP update primary and alternate points of contact.

Table 9.1-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Captain Edward Esposito Essex County Sheriff's – Office of Emergency Management 560 Northfield Avenue, West Orange, NJ 07052 (973) 324-9750 EEsposito@EssexSheriff.com	Sanjeev Varghese, Public Works Director and County Engineer 900 Bloomfield Avenue, Verona, NJ 07044 973-226-8500 ext. 260 svarghese@essexcountynj.org

9.1.2 County Profile

Section 3 (County Profile), Volume I of this HMP includes details on Essex County's population, location, climate, history, growth, and development.

9.1.3 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction's overall risk to its hazards of concern. The jurisdictional annexes for each municipality summarize recent and expected future development trends, including major residential/commercial development and major infrastructure development. Essex County reviews every proposed subdivision in the County. The County reviews every site plan for proposed development that will impact County facilities (e.g. stormwater pipes, county roads, etc.).

9.1.4 Capability Assessment

Essex County performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Section 5 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Information on National Flood Insurance Program (NFIP) compliance.
- Classification under various community mitigation programs.
- Adaptive capacity for the impacts of climate change.



Areas that mitigation is currently integrated are summarized in Capability Assessment (subsection 9.1.4). Essex County identified specific integration activities that will be incorporated into municipal procedures are included in the updated mitigation strategy. Refer to Appendix X for the results of the planning/policy document review and the answers to integration survey questions.

PLANNING, LEGAL AND REGULATORY CAPABILITY

The table below summarizes the legal and regulatory tools that are available to Essex County.

Table 9.1-2. Planning, Legal and Regulatory Capability

	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years ? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Building Code	No	State and Local	Yes	-	-
Comment: NJAC 5:23-3, 14; enforced at the local level. The local municipality enforces the building code.					
Zoning Code	No	Local	Yes	-	-
Comment: Enforced at the local level					
Subdivisions	Yes	County and Local	Yes	-	-
Comment: At the county level, the Essex County Planning Board performs the review and approval for all subdivisions of land within the County. The subdivision application asks applicants to identify whether or not the site is in a floodplain. If so, they need to obtain a NJDEP permit. The site plan application asks applicants to identify existing and proposed impervious surfaces. It also asks the applicant to identify whether or not it is in the floodplain. If so, applicants will need to obtain a NJDEP permit.					
Stormwater Management	No	State and Local	Yes	-	-
Comment: NJDEP Rule N.J.A.C. 7:8; stormwater management is regulated at the municipal level					
Post-Disaster Recovery	No	-	-	-	-
Comment:					
Real Estate Disclosure	Yes	State – Division of Consumer Affairs	Yes	Yes	-
Comment: N.J.A.C. 13:45A-29.1; Before signing a contract of sale, all purchasers must receive a New Jersey Public Offering Statement (POS) approved by the New Jersey Real Estate Commission. The POS provides information such as proximity to hospitals, schools, fire and police, as well as any hazards, risks or nuisances in or around the subdivision.					
Growth Management	Yes	County	Yes	-	-
Comment: With regards to growth management, at the County level, Essex County Department of Public Works is responsible for growth management related to county roads. Population growth and development is performed at the local level.					
Site Plan Review	Yes	County	No	Yes	-
Comment: Essex County performs site plan reviews prior to any local building official issuing a permit. Site plan review is performed for any proposed land development including commercial, industrial, multi-family structures containing five or					



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years ? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
more units, or any land development requiring an off-street parking area or an off-street standing area for an excess of five vehicles, or producing surface runoff directly or indirectly to a county road, on any property having frontage on a county road. The site plan must be submitted to the Essex County Planning Board for their review and approval/denial. While site plan reviews are not required for residential structures containing less than five units, the County encourages developers to consult with the Planning Board. Lastly, the site plan application asks applicants if the proposed development is located in the floodplain and the amount of existing and proposed impervious surfaces.					
Environmental Protection	No	-	-	-	-
Comment:					
Flood Damage Prevention	No	-	-	-	-
Comment: Performed and enforced at the local level					
Wellhead Protection	-	-	-	-	-
Comment:					
Emergency Management	No	-	-	-	-
Comment:					
Climate Change	No	-	-	-	-
Comment:					
Disaster Recovery Ordinance	No	-	-	-	-
Comment:					
Disaster Reconstruction Ordinance	No	-	-	-	-
Comment:					
Other	Yes	County	No	-	-
Comment: Complete Streets policy; adopted by the Board of Chosen Freeholders on April 25, 2015 making “Complete Streets” an official policy of the County. It sets a mandate for the future design of County’s roads and bridges.					
Planning Documents					
Comprehensive / Master Plan	No	-	-	-	-
Comment:					
Capital Improvement Plan	Yes	County	Allowed	Yes	-
Comment: The plan is updated each year by the Engineering Division and Department of Public Works. This includes mitigation-related projects such as county roadway improvements, drainage improvements on county roads, and various studies for county-owned structures and facilities. The County also includes projects that will assist with making the County more resilient to future storms.					
Disaster Debris Management Plan	Yes	County	No		
Comment:					
Floodplain or Watershed Plan	-	-	-	-	-



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years ? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Comment:					
Stormwater Management Plan	No	Local	Yes – local level		
Comment: These plans are developed on the local level.					
Stormwater Pollution Prevention Plan	No	Local	Yes – local level	-	-
Comment: While this is done at the local level, the County provides stormwater pollution prevention and reduction information on their website (http://ecdpcw.org/division_of_planning.php).					
Urban Water Management Plan	-	-	-	-	-
Comment:					
Habitat Conservation Plan	-	-	-	-	-
Comment:					
Economic Development Plan	No	-	No	-	-
Comment:					
Shoreline Management Plan	-	-	No	-	-
Comment:					
Community Wildfire Protection Plan	No	Local	No	-	-
Comment:					
Community Forest Management Plan	No	Local	No	-	-
Comment:					
Transportation Plan	Yes	County	No	No	Yes - 2020-ESSEX COUNTY-010
Comment: The Essex County Comprehensive Transportation Plan was updated in June 2013. It was developed to meet mobility and transportation safety needs across the County through the year 2035. The plan includes a description of natural and environmental resources in the County, including floodplains. The plan includes an inventory of roadways and multi-modal, in addition to a needs assessment. However, the plan does not incorporate hazard-prone areas, such as floodplains, and reducing or avoiding transportation development in hazard-prone areas. Refer to the new mitigation action 2020-ESSEX COUNTY-010 in Table 9.1-13.					
Agriculture Plan	No	-	No	-	-
Comment:					
Climate Action Plan	Yes	Regional	No	Yes	-
Comment: The NJTPA Passaic River Climate Resilience Planning Study - A climate resilience planning effort for transportation in the New Jersey portion of the Passaic River Basin, including parts of Bergen, Essex, Hudson, Morris, Passaic, Somerset, Sussex, and Union counties, was completed in June 2019. The purpose of the planning study was to identify adaptation strategies to protect transportation corridors and assets from extreme weather events, including excessive					



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				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
flooding, heat waves and sea level rise. The study consisted of the following activities: conduct a vulnerability assessment of the area's transportation system; project future climate risks for the Passaic River Basin; develop adaptation strategies for critical transportation corridors and assets; develop recommended actions and strategies to protect the transportation system from damage and disruption. Many of the strategies identified in this plan are already being integrated by Essex County. This includes: increasing capacity of stormwater infrastructure and drainage systems, installing energy system back-ups (e.g. generators and solar panels), incorporating redundant power and communication lines and systems, implementing green infrastructure (e.g. tree planting), conducting routine maintenance of culverts and storm sewers (county and municipal level), incorporate floodproofing were appropriate at critical facilities, and conducting maintenance on flood-impacted infrastructure.					
Tourism Plan	No	-	No	-	-
Comment:					
Business Development Plan	No	-	No	-	-
Comment:					
Other	Yes	County	No	See below	See below
Comment: <ul style="list-style-type: none">• Comprehensive Energy Master Plan (2011) – This plan included a review of the County's existing energy operations at all county-owned or occupied facilities and developed a strategic energy master plan to act as a blueprint for future County initiatives concentrated at accomplishing increasing energy efficiency and conservation, reducing energy consumption, decreasing energy costs, reducing greenhouse gas emissions, identifying renewable energy options, and increasing the use of sustainable practices. Essex County is implementing these goals, including the recent installation of solar panels at the DPW headquarters located in Verona.• Complete Streets Policy (2015) - Complete Streets policy; adopted by the Board of Chosen Freeholders on April 25, 2015 making "Complete Streets" an official policy of the County. It sets a mandate for the future design of County's roads and bridges.• Invasive Species Management Plan• Open Space Plan – it is expired and holding back the County's ability to complete acquisitions (2020-ESSEX COUNTY-018)• Waste Water Management Plan (December 4, 2014) - This plan provides a comprehensive Wastewater Management Plan for Essex County. It is intended to project future development and the associated wastewater management and water supply requirements with that development. The planning process of this plan was designed to protect environmentally sensitive areas and to reduce pollutant loads to the groundwater. The environmentally sensitive areas are based on mapped data by NJDEP and includes wetlands, floodprone areas, and designated river areas. The plan includes mapped flood areas throughout Essex County.• Strategic Recovery Planning Report (SRPR)- This plan was prepared as part of the New Jersey Department of Community Affairs' Post Sandy Planning Assistance Grant Program. Utilizing the 2015 HMP, the plan provided a recommendation of projects, categorized as hazard mitigation or preparedness. A more detailed land use analysis was conducted for the SRPR. For example, an exposure analysis was completed to assess the vulnerability of the residential and non-residential land uses with in the County to flooding. This has been included in the Hazard Mitigation Plan in the appropriate hazard profiles. Since the plan was adopted, the County has worked on addressing the recommendations of the plan including the following. The County continues to work through the recommendations of the SRPR:<ul style="list-style-type: none">○ Preparing to update the current Essex County Master Plan (Essex County Transportation Plan)○ Reviewing and updating zoning and land use regulations, as appropriate. While zoning is controlled by the local government, the County still provides input in what should be included.					
Response/Recovery Planning					
Comprehensive Emergency Management Plan (CEMP) /	Yes	County	Yes	-	-



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years ? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Emergency Operations Plan (EOP)					
<i>Comment: Essex County Sheriff's Office – Office of Emergency Management is responsible for maintaining and updating the County's Emergency Operations Plan (July 6, 2021).</i>					
Threat & Hazard Identification & Risk Assessment (THIRA)	No	-	-	-	-
<i>Comment:</i>					
Post-Disaster Recovery Plan	No	-	-	-	-
<i>Comment:</i>					
Continuity of Operations Plan	Yes	County	No	-	-
<i>Comment: updated in 2007 – County Administrator's Office in conjunction with County OEM</i>					
Public Health Plan	Yes	County	No	No	No
<i>Comment:</i> <ul style="list-style-type: none"> Clara Maass Medical Center Community Health Needs Assessment 2016-2018 – this assessment was designed to ensure that the medical center continues to effectively and efficiently serve the health needs of its service area, which includes Essex County (Belleville, Bloomfield, Newark, and Nutley). The Clara Maass Medical Center is located in Belleville and is one of the seven acute care hospitals in Essex County. The assessment looked at the five top health issues based on capacity, resources, competencies, and needs specific to the populations it serves. The issues include: access to health care, cardiovascular disease and prevention, cancer care and prevention, obesity, and respiratory care and disease prevention. Newark Beth Israel Medical Center Community Health Needs Assessment 2016-2018 – this assessment was designed to ensure that the medical center continues to effectively and efficiently serve the health needs of its service area, which includes Essex County (East Orange, Irvington, Newark). The medical center is located in Newark and is one of the seven acute care hospitals in the County. The assessment looked at the seven top health issues based on capacity, resources, competencies, and needs specific to the populations it serves. The issues include: heart disease, cancer, violence, diabetes, asthma, dental conditions, and infant mortality. Saint Barnabas Medical center Community Health Needs Assessment 2016-2018 – this assessment was designed to ensure that the medical center continues to effectively and efficiently serve the health needs of its service area, which includes Essex County. The medical center is located in Livingston and one of the seven acute care hospitals operating in the County. The assessment looked at the five top health issues based on capacity, resources, competencies, and needs specific to the populations it serves. The issues include: cancer, cardiovascular disease, obesity and diabetes, asthma, and reducing disparities in access to care and readmissions. 					
Other	No	-	-	-	-
<i>Comment:</i>					

Table 9.1-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits?	Yes
- If no, who does? If yes, which department?	Essex County Department of Public Works issues permits to construct, improve, work on, or occupy the County's sidewalks and roadways. Anyone who wants to perform work on County streets or sidewalks needs to obtain a permit from the Department of Public Works.



	The County will review site plans that impact County facilities (e.g. roads, drainage systems, county parks, county buildings). All subdivisions proposed in Essex County need to be approved by Essex County Planning.
Does your jurisdiction have the ability to track permits by hazard area?	No – the County can track permits but not by hazard areas
Does your jurisdiction have a buildable lands inventory? -If yes, please describe briefly. -If no, please quantitatively describe the level of buildout in the jurisdiction.	No, the County does not have a buildable lands inventory. Essex County is nearly 100% developed.

ADMINISTRATIVE AND TECHNICAL CAPABILITY

The table below summarizes potential staff and personnel resources available to Essex County.

Table 9.1-4. Administrative and Technical Capabilities

Staff/Personnel Resource	Available?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	County Planning Board
Mitigation Planning Committee	No	-
Environmental Board / Commission	Yes	Essex County Environmental Commission; there are numerous groups in the County completing outreach on green infrastructure and climate change, including Rutgers Cooperative Extension, Rutgers Water Resources Program and ANJEC
Open Space Board / Committee	Yes	Open Space
Economic Development Commission / Committee	Yes	Essex County Department of Economic Development, Training, and Employment
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	The Communications Center monitors and directs all field units through the use of a computer aided dispatch (CAD) system. The CAD system is capable of tracking unit locations, creating incident files, applying hazard alerts to addresses, and creating statistical reports on crime and incident data. The municipalities utilize Nixle to rely emergency alerts to residents who register with the program.
Maintenance program to reduce risk	Yes	Tree inspections/trimming; catch basin maintenance and clearing; road inspections; the County is currently developing a snow plow task force
Mutual aid agreements	Yes	Municipalities within the County, surrounding counties, UASI
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	County Engineering
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering inspectors and licensed engineers
Planners or engineers with an understanding of natural hazards	Yes	Engineering and Planning Departments
Staff with training in benefit/cost analysis	No	-
Staff with training in green infrastructure	Yes	Engineering and Planning Departments
Staff with education/knowledge/training in low impact development	Yes	Engineering and Planning Departments
Surveyors	Yes	Engineering Department
Stormwater engineer	Yes	Engineering Department



Staff/Personnel Resource	Available?	Department/Agency/Position
Personnel skilled or trained in GIS applications	Yes	Essex County Sheriff's GIS Department
Scientist familiar with natural hazards in local area	No	-
Emergency manager	Yes	Essex County Sheriff's OEM
Grant writers	Yes	Administrator's Office
Resilience Officer	No	
Watershed planner	No	
Environmental specialist	Yes	Engineering and Planning Departments
Other	No	

FISCAL CAPABILITY

The table below summarizes financial resources available to Essex County.

Table 9.1-5. Fiscal Capabilities

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No - not on county level
User Fees for Water, Sewer, Gas or Electric Service	No - not on county level
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Clean Water Act 319 Grants (Nonpoint Source Pollution)	Yes
Other	Yes - state and federal transportation funding, homeland security, UASI

EDUCATION AND OUTREACH CAPABILITY

The table below summarizes the education and outreach resources available to Essex County.

Table 9.1-6. Education and Outreach Capabilities

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes; however, it is performed by an outside consultant
Do you have hazard mitigation information available on your website? ▪ If yes, briefly describe.	Yes – emergency alerts on the County website, reverse 911 calls prior to and during hazard events at the municipal level
Do you use social media for hazard mitigation education and outreach? ▪ If yes, briefly describe.	Yes – the County utilizes Facebook and Twitter; the various county departments have their own social media accounts
Do you have any citizen boards or commissions that address issues related to hazard mitigation? ▪ If yes, briefly describe.	No
Do you have any other programs already in place that could be used to communicate hazard-related information? ▪ If yes, briefly describe.	Yes – municipal websites



Criterion	Response
Do you have any established warning systems for hazard events? ▪ If yes, briefly describe.	Yes - emergency alerts on the County website, reverse 911 calls prior to and during hazard events at the municipal level

COMMUNITY CLASSIFICATIONS

The table below summarizes the classifications for community programs available to Essex County.

Table 9.1-7. Community Classifications

Program	Participating?	Classification	Date Classified
Community Rating System	N/A	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	N/A	-	-
Public Protection (Fire ISO Protection Class)	N/A	-	-
Storm Ready Certification	No	-	-
Firewise Community Classification	No	-	-

N/A = Not applicable

ADAPTIVE CAPACITY

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). In other words, it describes a jurisdiction’s current ability to adjust to, protect from, or withstand a hazard event. This term is often discussed in reference to climate change; however, adaptive capacity also includes an understanding of local capacity for adapting to current and future risks and changing conditions. The table below summarizes the adaptive capacity for each hazard and the jurisdiction’s rating.

- Does the County have access to resources to determine the possible impacts of climate change upon the County and its municipalities? Yes
- Is the administrative supportive of integrating climate change in policies or actions? Yes
- Is climate change already being integrated into current policies/plans or actions (projects/monitoring) within the County? Yes – many of the recommended strategies identified in the NJTPA Passaic River Basin Climate Resilience Planning Study are currently being implemented and integrated by the County. This includes: increasing capacity of stormwater infrastructure and drainage systems, installing energy system back-ups (e.g. generators and solar panels), incorporating redundant power and communication lines and systems, implementing green infrastructure (e.g. tree planting), conducting routine maintenance of culverts and storm sewers (county and municipal level), incorporate floodproofing where appropriate at critical facilities, and conducting maintenance on flood-impacted infrastructure.

Table 9.1-8. Adaptive Capacity of Climate Change

Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low
Coastal Erosion and Sea Level Rise	Low
Coastal Storm (Hurricane, Tropical Storm, Nor'Easter)	Medium
Drought	Low
Earthquake	Medium
Extreme Temperature	High
Flood	High



Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low
Geological hazards (landslide, subsidence, sinkholes)	High
Severe Weather	High
Severe Winter Weather	High
Wildfire	Low
Civil Disorder	Medium
Cyber Attack	Low
Disease Outbreak (West Nile Virus, Eastern Equine Encephalitis, St. Louis Encephalitis, La Crosse Encephalitis, Lyme Disease, Influenza, Ebola Virus)	Medium
Economic Collapse (new)	Low
Hazardous Substances	High
Power Failure	High
Terrorism	Medium
Transportation Failure (vehicular accidents, aviation accidents, railway failures and accidents, roadway and bridge failures)	Medium

Notes:

High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;

Low = Capacity does not exist or could use substantial improvement; Unsure = Not enough information is known to assign a rating.

NATIONAL FLOOD INSURANCE PROGRAM

Management and regulation of the regulatory floodplains are done at the local level. Refer to the individual jurisdictional annexes for details on the NFIP for each municipality.

ADDITIONAL AREAS OF EXISTING INTEGRATION

- Land Use Planning – The Essex County Planning Department supports all aspects of local planning and seeks to integrate natural hazard risk and support mitigation project identification and implementation through its planning programs and resources.
- Emergency Management Plans – Essex County continues to develop, enhance, and implement existing emergency response plans to utilize new and developing technology and information as it becomes available.
- Essex County has regularly scheduled meetings with Emergency Managers from each community. Training for all municipalities and colleges are provided for all community emergency response teams (CERT) within the County. In addition, the County has organized instructor-led training from utility companies regarding generator safety for LEPC members. LEPC meetings include agency representatives from public, private, utilities, non-profits, educational institutions.
- Coastal evacuation routes are displayed along roadways in the County.
- The Sheriff's Office and Community Affairs attend meetings to present information regarding mitigation, response, resource availability, grant programs and flood map updates at County and municipal events.
- The Sheriff's Office provides a significant amount of safety tips on their website (<https://www.essexsheriff.com/safety-tips/>). This includes informational brochures including terrorism preparedness, severe weather driving tips, making a 'go kit', and winter driving tips.
- The Sheriff's Office attends public events and distributes informational brochures about hazard risk and mitigation to attendees. Recent events include Essex County Senior Wellness Day and Essex County National Night Out.



9.1.5 Hazard Event History Specific to the Jurisdiction

Essex County has a history of hazard events, as detailed in Section 4 (Risk Assessment) of this plan. Since 1954, Essex County has been included in 28 FEMA disaster declarations. Of which, seven were identified as hurricane events, six identified as flood events, six identified as severe storm events, four identified as snow events, two identified as drought events, two identified as other (West Nile Virus and water shortage), and one identified as fire. A summary of historical events appears in each hazard profile of the plan and includes a chronology of events that have affected the County and its municipalities.

9.1.6 Jurisdiction-Specific Vulnerabilities and Hazard Ranking

The hazard profiles in Section 4 (Risk Assessment) provide detailed information regarding each plan participant's vulnerability to the identified hazards. Table 9.1-9 summarizes the Essex County risk assessment results and data used to determine the hazard ranking. The following summarizes the hazards of greatest concern and risk to Essex County.

In an attempt to summarize the confidence level regarding the input utilized to populate the hazard ranking, a gradient of certainty was developed. A certainty factor of high, medium or low was selected and assigned to each hazard to provide a level of transparency and increased understanding of the data utilized to support the resulting ranking. The following scale was used to assign a certainty factor to each hazard:

- High—Defined scenario/event to evaluate; probability calculated; evidenced-based/quantitative assessment to estimate potential impacts through hazard modeling.
- Moderate—Defined scenario/event or only a hazard area to evaluate; estimated probability; combination of quantitative (exposure analysis, no hazard modeling) and qualitative data to estimate potential impacts.
- Low—Scenario or hazard area is undefined; there is a degree of uncertainty regarding event probability; majority of potential impacts are qualitative.



Table 9.1-9. Summary of Risk Assessment Results

Hazard of Concern	Hazard/ Scenario(s) Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
Coastal Erosion and Sea Level Rise	Coastal Erosion Hazard Area (CEHA):	CEHA:	0	CEHA:	0	CEHA:	\$0	High
		SLR +1ft:	0	SLR +1ft:	0	SLR +1ft:	\$0	
	Sea Level Rise: NOAA +1ft and +3ft rise	SLR +3ft:	0	SLR +3ft:	0	SLR +3ft:	\$0	
Coastal Storm	100- and 500- MRP Hurricane Wind	Category 1:	92	Category 1:	19	100-year Wind Loss:	\$3,381,110	High
		Category 2:	951	Category 2:	197			
	Category 1 through Category 4 SLOSH	Category 3:	2,229	Category 3:	462	500-year Wind Loss:	\$16,934,187	
		Category 4:	2,595	Category 4:	533			
Drought	Drought event	Majority of the County is serviced by water suppliers with surface water sources.		Droughts are not expected to cause direct damage to buildings.		Losses would be limited, due to lack of major agricultural industry.		Low
Earthquake	100, 500-, 2,500-Year Mean Return Period Event	NEHRP D&E:	2,368	NEHRP D&E:	504	100-year Loss:	\$0	High
		Liquefaction Class 4:	179	Liquefaction Class 4:	37	500-year Loss:	\$4,616,521	
						2,500-year Loss:	\$71,094,612	
Extreme Temperature	Extreme temperature event (heat or cold)	Over 65 Population:	4,600	Physical impacts due to extreme temperatures would be limited.		Loss of business function is possible due to unexpected repairs (i.e. pipes bursting) or power failures.		Low
		Population Below Poverty Level:	3,515					
Flood	100- and 500-Year Mean Return Period Event	100-year	716	100-year	152	100-year Loss:	\$269,142,437	High
		500-year	1,606	500-year	545			
Geological	High Landslide Susceptibility Areas	Class A:	0	Class A:	0	Class A:	0	Moderate
		Class B:	5	Class B:	1	Class B:	\$359,884	
Severe Weather	Severe Weather Event	Entire population exposed; The degree of impact to the population depends on the scale of the incident.		Entire building stock is exposed; The degree of impact depends on the scale of the incident.		Economic losses could be similar to those of the coastal storm (wind and surge) and flooding hazards.		Low
Severe Winter Weather	Severe Winter Weather Event	Entire population exposed; The degree of impact to the population depends on the scale of the incident.		Entire building stock is exposed; The degree of impact depends on the scale of the incident.		The cost of snow and ice removal and repair of roads can impact local operating budgets.		Low



Hazard of Concern	Hazard/ Scenario(s) Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
Wildfire	Wildfire Fuel Hazard areas (High, Very High, Extreme)	Wildfire:	0	Wildfire:	0	Wildfire:	\$0	Moderate
Civil Disorder	Civil disorder event	Population in the immediate vicinity will be impacted.		Buildings in the immediate vicinity will be most impacted.		Economic assets in the immediate vicinity will be most impacted.		Low
Cyber Attack	Cyber-attack event	The degree of impact to the population depends on the scale of the incident.		Damages due to a cyber-attack may be limited.		The degree of damages depends on the scale of the incident. Loss of utilities/communication would have widespread economic impacts.		Low
Disease Outbreak	An outbreak of one of the diseases evaluated	Entire population exposed; The degree of impact to the population depends on the scale of the incident		Disease outbreak would not have a direct impact on buildings.		Impacts to food supply and water supply; Costs of activities and programs implemented to address outbreaks and prevent spread.		Low
Economic Collapse	Recessions, Depressions, Interruption of normal economic conditions	The degree of impact to the population depends on the scale of the incident.		Damages due to economic collapse may be limited; property owners that cannot afford to maintain the structure may become abandoned/rundown.		The degree of damages depends on the scale of the incident. Massive impacts due to loss of jobs, businesses, and tax revenue are possible.		Low
Hazardous Substances	Release of a hazardous substance whether fixed site or in-transit	Population impacted will depend on the type of material and scale of the incident. May include population within small radii of site.		The degree of damages to a building depends on the scale of the incident.		The degree of damages depends on the scale of the incident.		Low
Utility Interruption	Disruption of power or potable water caused by accident, sabotage, natural hazards, or equipment failure.	The degree of impact to the population depends on the scale of the incident.		The degree of damages to buildings depends on the scale of the incident; Physical impacts to structures may occur if utilities are keeping critical functions online (i.e. sump pumps).		The degree of damages depends on the scale of the incident.		Low
Terrorism	Terrorist Attack in the County	The degree of impact to the population depends on the scale of the incident; Population in the immediate vicinity will be impacted.		The degree of damages to buildings depends on the scale of the incident; Buildings in the immediate vicinity will be most impacted.		The degree of damages depends on the scale of the incident.		Low
Transportation Failure	One accident on any of the following: Roadway/vehicular, Aviation, Rail	The degree of impact to the population depends on the scale of the incident; Population in the immediate vicinity will be impacted.		The degree of damages to asset depends on the scale of the incident; Assets in the immediate vicinity will be most impacted.		The degree of damages depends on the scale of the incident; Assets in the immediate vicinity will be most impacted.		Low



REPETITIVE FLOOD LOSSES

Refer to the municipal annexes for details on the number of repetitive loss, severe repetitive loss, and the number of mitigated properties in each municipality.

CRITICAL FACILITIES AND LIFELINES

The table below identifies critical facilities and lifelines owned by the County located in the 1-percent and 0.2-percent floodplain and whether or not the facility has already been mitigated, or a project is identified and included in the updated mitigation strategy.

Table 9.1-10. Potential Flood Losses to Critical Facilities and Lifelines

Name	Type	Exposure		Status of Mitigation
		1% Event	0.2% Event	
ECSO Equipment Storage Facility	Police	X	X	2020-ESSEX COUNTY-019
ECSO Bureau of Narcotics	Government		X	Bureau of Narcotics has been relocated and located on the second floor of the building located at 115 Clifton Ave., Newark; the OEM offices at this facility have been mitigated (elevated)
Essex County Airport	Airport	X	X	Essex County Improvement Authority owns the airport – communicate with the Authority to recommend mitigation measures – 2020-ESSEX-2020
Essex County Correctional Facility	Correctional Institution	X	X	Purchase additional high water vehicles (2020-ESSEX COUNTY-014) as a mode of transportation to and from the facility; floodwalls are not feasible due to the deployment and storage of floodwalls; it is not feasible to elevate the structure

ADDITIONAL IDENTIFIED VULNERABILITIES

Refer to Section 4 (Risk Assessment) and the municipal annexes for vulnerable areas throughout the County.

HAZARD AREA EXTENT AND LOCATION

Hazard area extent and location maps were generated for Essex County that illustrate the probable areas impacted. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which Essex County has significant exposure. Count maps are located in each hazard section in the Risk Assessment (Section 4).

HAZARD RANKING

The hazard ranking process involves an assessment of the likelihood of occurrence for each hazard; its potential impacts on people, property, and the economy; community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 4.4 (Hazard Ranking), each plan participant may have differing degrees of risk exposure and vulnerability compared to Essex County as a whole. Therefore, each jurisdiction ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential hazards across Essex County. The Steering Committee and Planning Committee reviewed the Essex County hazard ranking table, as well as its individual results, to reflect the relative risk of the hazards



of concern to the County. During the review of the hazard ranking, the calculated rankings were adjusted to incorporate the perceived adaptive capacity with respect to the relevant hazard.

- The County adjusted the calculated draft 2020 ranking for wildfire from low to medium due to the lack of sufficient response equipment (refer to Table 9.1-13, action 2020-ESSEX COUNTY-12) and insufficient hydrant capacity and tenders on hand (action 2020-ESSEX COUNTY-15).
- The County adjusted the calculated draft 2020 ranking for terrorism from low to high. This is because the County has several high-profile locations (hospitals, schools, commercial establishments) and critical infrastructure in the County.

Table 9.1-11. Essex County Hazard Ranking

Coastal Erosion and Sea Level Rise	Coastal Storm	Drought	Earthquake	Extreme Temperature	Flood
Low	Low	Medium	Medium	Medium	Medium

Geological Hazards	Severe Storm	Winter Storm	Wildfire	Civil Disorder	Cyber Attack
Low	High	High	Medium	Medium	Medium

Disease Outbreak	Economic Collapse	Hazardous Substances	Power Outrages	Terrorism	Transportation Failure
Medium	Medium	Medium	High	High	Medium

9.1.7 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and provides action prioritization.

PAST MITIGATION INITIATIVE STATUS

The following table summarizes the County's progress on their mitigation strategy identified in the 2015 HMP. Actions that are carried forward as part of this plan update are included in the updated mitigation strategy (Table 9.1-13) followed by its prioritization (Table 9.1-14). Previous actions that are now on-going programs and capabilities are indicated as such in the following table and can also be found under 'Capability Assessment' presented previously in this annex. Appendix X provides all attributes associated with the 2015 HMP mitigation strategy.

Table 9.1-12. Status of Previous HMP Mitigation Actions

2015 Action Number Action Description		Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
				Check if Yes	Enter 2020 HMP Action #
Essex-1	Support and obtain backup power and alternative energy sources to ensure continuity	Essex County Sheriff's Office	In Progress – a portion of this action has been completed	X	2020-ESSEX



2015 Action Number Action Description		Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
				Check if Yes	Enter 2020 HMP Action #
	of operations. Sites currently identified: 1. Essex County K9/Bomb building 2. DPW building generator 3. Essex County Patrol Division Headquarters generator (Newark) 4. Essex County OEM Storage/Crime Scene Facility (Orange) generator 5. Essex County DPW/Fleet Headquarters generator 6. DPW/Roads and Bridges Headquarters (Cedar Grove) 7. Catholic Charities of the Archdiocese of Newark shelter		using FEMA mitigation grants from Superstorm Sandy. Generators were purchased for the following: <ul style="list-style-type: none"> DPW building generator (900 Bloomfield Ave., Verona) Essex County Patrol Division Headquarters generator (525 W Market St., Newark) Essex County DPW/Fleet Headquarters (99 West Bradford Ave., Cedar Grove) DPW/Roads and Bridges Headquarters (99 West Bradford Ave., Cedar Grove) 		COUNTY-001
Essex-2	Essex County Traffic Control Transfer Switch generator	Essex County Sheriff's Office	No Progress – due to lack of matching funds	X	2020-ESSEX COUNTY-002
Essex-3	Newark AIDS Consortium, INC. Broadway House: Newark AIDS Consortium INC. Broadway House for Continuing Care generator	City of Newark	No Progress – remove from the HMP; the facility never applied for funding		
Essex-4	Seton Hall University: Seton Hall University generator project	Seton Hall University	No Progress – remove from the HMP; the facility never applied for funding		
Essex-5	Repair bridge into Senior Recreational Center (Belleville Old Mill St.) (Old initiative)	County Engineering Office	Completed in 2016/2017		
Essex-6	Rehabilitate bridges requiring structural work. Five vulnerable county bridges have been identified at this time. <ul style="list-style-type: none"> Center Street Bridge in Nutley Hoover Ave Bridge in Bloomfield Cherry Hill Bridge in Millburn Dougall Street Bridge in West Caldwell Lyons Ave Bridge in Irvington 	County Engineering Office	In Progress - two bridges complete (Center Street Bridge in Nutley and Lyons Ave. bridge in Irvington); have funding set aside to complete		
Essex-7	Utilize the recommendations of the Strategic Recovery Planning Report to further identify roadway flooding upon county roadways and to develop future mitigation actions to address those issues (Old initiative)	County Engineering Office	Ongoing Capability – County has been working through SRPR recommendations		
Essex-8	Enlarge drainage system on JFK Parkway in Millburn. JFK is a county owned roadway as well as an evacuation route. (Old initiative)	County Engineering Office	In Progress	X	2020-ESSEX COUNTY-003
Essex-9	Enlarge drainage system on Bloomfield Ave in Verona. Bloomfield Ave is a county owned roadway as well as an evacuation route. (Old initiative)	County Engineering Office	Complete – improvements in this section of Verona have been completed		
Essex-10	Stream culvert work in residential areas storm water run-off– Eagle Rock Reservation area including Afterglow Ave. and Ravine Rd and flooding of Cole Rd. (Old initiative)	County Engineering Office	In Progress – this work is in progress by the County; will not be included in the HMP		
Essex-11	Conduct a study to evaluate drainage systems on roadways to reduce the impacts of flooding. Areas identified to date: Passaic Avenue and Bloomfield Avenue in Verona which are both	County Engineering Office	Ongoing – the County knows where the problem is but work still needs to be done	X	2020-ESSEX COUNTY-004



2015 Action Number Action Description		Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
				Check if Yes	Enter 2020 HMP Action #
	evacuation routes (Old initiative)				
Essex-12	Purchase three 525 gallon potable water trailers	Essex County Sheriff's Office	No Progress	X	2020-ESSEX COUNTY-005
Essex-13	Provide redundant methods for Voice/Data transmissions 4G wireless broadband at DPW Headquarters.	Sheriff's Communication Bureau	No Progress	X	2020-ESSEX COUNTY-006
Essex-14	Purchase 4 digital sign boards with variable message capability	Essex County Sheriff's Office of Emergency Management	Complete		
Essex-15	Purchase portable flood wall which will be deployed prior to a flooding event to protect critical County facilities	County Engineering Office	No Progress; at the time of the plan update, this option is not feasible		
Essex-16	Install quick-connects for emergency generators at nine County fueling stations	County Engineering Office	In Progress – one facility has been completed	X	2020-ESSEX COUNTY-007
Essex-17	Install a County-Wide emergency alert system	Essex County Sheriff's Office of Emergency Management	No Progress	X	2020-ESSEX COUNTY-008
Essex-18	Conduct a functional exercise related to school safety	Essex County Sheriff's Office	No Progress	X	2020-ESSEX COUNTY-009
Essex-19	Administratively and financially support installing flood control measures in flood zone areas to protect critical facilities (i.e., levees, trenches, sump pump systems) or obtain equipment to address short-term needs (i.e., pumps) These facilities include the following at this time: 1. County Detention Facility in Newark – Essex County Correctional Facility 2. Passaic Valley Sewerage Commission	Essex County Sheriff's Office of Emergency Management	At the time of this plan update, this action is not technically feasible for the County; therefore, it will not be included in the 2020 HMP		
Essex-20	Pursue Sandy Recovery Planning Assistance Grant from NJ Department of Community Affairs	Division of Planning	Complete– The SRPR plan is complete		
Essex-21	Develop a five year plan for capital projects directly linked to recovery, mitigation or preparedness	Division of Planning	Ongoing Capability – plans are updated every 5 years and the County includes projects that will assist with making the County more resilient to future storms		
Essex-22	Update the County Master Plan with a Community Resiliency Element that reviews the Land Use Plan Element and development standards against the vulnerability issues outlined in this SRPR and adopt as a Master Plan Element.	Division of Planning	No Progress – County does not have a specific plan; will start updating in 2020/2021 – the only thing they can control is transportation	X	2020-ESSEX COUNTY-010
Essex-23	Review zoning and land use regulations against the vulnerability issues outlined in this SRPR and develop amendments to anticipate necessary changes to height, bulk and setback requirements needed to improve resiliency based on recommendations in the Community Resiliency Element	Division of Planning	Ongoing Capability – always changing and evolving – zoning controlled by local governments		



2015 Action Number Action Description		Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
				Check if Yes	Enter 2020 HMP Action #
Essex-24	Develop specific strategic plans for neighborhoods most severely impacted by Sandy, including the "Island" neighborhood in the Ironbound and impacted neighborhoods in Fairfield Township	Division of Planning	No Progress – not applicable to the county because they have limited planning jurisdiction in these areas		
Essex-25	Review existing permitting procedures to determine improvements for fast-tracking/streamlining for expediting projects directly related to recovery or mitigation and that are consistent with adopted Design Standards	Division of Planning	Ongoing Capability – This is the Division of Planning's responsibility and already conducts these reviews. This is considered a capability.		
Essex-26	Develop design standards to address the visual impact of mitigation measures such as elevating bulkheads, elevating buildings on foundations or pilings, etc. Such design standards might include requirements for skirting exposed pilings, parking under the lowest habitable floor, using exterior decking to stagger stairways to elevated first floor levels, etc.	Division of Planning	No Progress – County cannot give design standards, this would need to be done at the jurisdictional level		
Essex-27	Develop a County Multi-jurisdiction Wildfire Preparedness Plan. Identify updated drafting locations in the reservation to ensure accessibility for pump trucks.	Essex County Sheriff's Office of Emergency Management	No Progress	X	2020-ESSEX COUNTY-011
Essex-28	Purchase a wildfire "brush truck" to combat wildfires within County	Essex County Sheriff's Office of Emergency Management	No Progress	X	2020-ESSEX COUNTY-012
Essex-29	Provide continued education, training and exercise opportunities to first responders and other local officials regarding floodplain management, natural and human-caused hazards and the Community Rating System.	Essex County Sheriff's Office of Emergency Management	Ongoing Capability - This is considered a capability. The Sheriff's Office		
Essex-30	Adopt new County roof standards to mitigate natural hazards	Division of Planning	No Progress – this is done at the state level building code (UCC)		
Essex-31	Revise County development standards which are used when evaluating private development along County roads to include more resilient building standards.	Division of Planning	Ongoing Capability – next revisions will be done in 2021		
Essex-32	Construct new Passaic River bridge crossing in the Newark area to relief currently over-burdened bridges and provide additional traffic redundancy in case of another hazard	Essex County Department of Public Works	No Progress – keep in the 2020 HMP- would need to work with Hudson County	X	2020-ESSEX COUNTY-013
Essex-33	Acquire additional high water vehicles that will permit ingress/egress of essential personnel and supplies during disasters	Essex County Sheriff's Office of Emergency Management	In Progress – Sheriff's Office has a few; County could use more (DPW)	X	2020-ESSEX COUNTY-014
Essex-34	Retrofit the County Dispatch Communications Center in Newark for flood and high winds.	Essex County Sheriff's Office of Emergency Management	No Progress – remove from the HMP		

In addition to the above progress, Essex County identified the following mitigation projects/activities that were completed but not identified in the 2015 HMP mitigation strategy:

- The Essex County OEM building is located in the floodplain and experienced flood damages in the past. The building has been mitigated by elevating one foot above the base flood elevation.



- Essex County received federal funds as a result of Superstorm Sandy in 2012. The County utilized grant funding to purchase and install backup power capabilities at critical facilities to provide continuity of operations during power outages:
 - Purchased and install photovoltaic power generation system (solar panels) at the DPW headquarters located at 900 Bloomfield Avenue in Verona
 - Purchased generators for critical facilities – DPW building at 900 Bloomfield Avenue in Verona, Essex County Patrol Division Headquarters in Newark, DPW fleet headquarters in Cedar Grove, and Roads/Bridges Headquarters in Cedar Grove.
- The County received FEMA Pre-Disaster Mitigation funding to update the 2015 HMP.

PROPOSED HAZARD MITIGATION INITIATIVES FOR THE PLAN UPDATE

Essex County participated in a risk assessment workshop in September 2019 in which detailed information was provided about assets exposed and vulnerable to the identified hazards of concern. The County participated in a mitigation action workshop in October 2019 and was provided a Mitigation Toolbox that included a mitigation catalog developed specifically for Essex County and its hazards of concerns; challenges and opportunities identified during the capability and risk assessments; available federal and state funding sources, and the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 *Selecting Appropriate Mitigation Measures for Floodprone Structures* (March 2007) and FEMA *Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards* (January 2013). Section 6 (Mitigation Strategy) and Appendix X (Mitigation Strategy Supplement) provide a more complete description of the Mitigation Toolbox and its resources.

Table 9.1-13 summarizes the comprehensive-range of specific mitigation initiatives Essex County would like to pursue in the future to reduce hazard impacts; some actions have been carried forward from the 2015 HMP. Initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in County 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.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as *High*, *Medium*, or *Low*. The table below summarizes the evaluation of each mitigation initiative, listed by action number.

Table 9.1-14 provides a summary of the prioritization of all proposed mitigation initiatives for this HMP update.



Table 9.1-13. Proposed Hazard Mitigation Initiatives

Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2020-ESSEX COUNTY-001 (previous action)	Backup power for County facilities	<p>Problem: Several County facilities do not have backup power to provide continuity of operations during a utility interruption. These facilities provide essential services to Essex County and its residents.</p> <p>Solution: Obtain backup power for the following facilities:</p> <ul style="list-style-type: none"> Essex County K9/Bomb building – portable generator OEM Storage/Crime Scene Facility – portable generator 	Existing	Utility Interruption	2, 6	Essex County Sheriff's Office	FEMA HMGP	Provide continuity of operations to the County during utility interruptions	\$100,000	2 years	High	SIP	PP, ES
2020-ESSEX COUNTY-002 (previous action)	Essex County Traffic Control Transfer Switch generator	<p>Problem: The Essex County traffic control transfer switch does not have backup power. During a utility interruption, this system cannot function properly and can create a transportation hazard for County personnel and residents.</p> <p>Solution: Purchase a portable generator to use during a utility interruption to operate the County's traffic control transfer switch.</p>	Existing	Utility Interruption	2, 6	Essex County Sheriff's Office	FEMA HMGP	Allow transfer switch to operate during utility interruptions	\$100,000	2 years	High	SIP	PP, ES
2020-ESSEX COUNTY-003 (previous action)	Enlarge drainage system on JFK Parkway in Millburn	<p>Problem: During heavy rains, JFK Parkway in Millburn becomes inundated due to the drainage systems becoming overwhelmed. This leads to road closures, creating a hazard for emergency personnel and residents.</p> <p>Solution: Enlarge the drainage system on JFK Parkway in Millburn to reduce or eliminate flooding that occurs in this area.</p>	Existing	Coastal Storm, Severe Weather, Flood	1, 2	County Engineering Office	CDBG, TIGER, County Budget	Reduces or eliminates flood damage, allow road to remain open during heavy rain events	\$1 million	5 years+	Medium	SIP	PP
2020-ESSEX COUNTY-004 (previous action)	Evaluate drainage systems in Essex County	<p>Problem: The drainage systems in the area of Passaic Avenue and Bloomfield Avenue in Verona and JFK Parkway in South Orange and Millburn become overwhelmed during heavy rain events, leading to flooding of roadways and surrounding properties. This results in road closures, restricting access to these sections of the County.</p> <p>Solution: Conduct a study to evaluate drainage systems on roadways to reduce the impacts of flooding. The systems include: Passaic Avenue and Bloomfield Avenue in Verona and JFK Parkway in Millburn and South Orange.</p>	Existing	Coastal Storm, Severe Weather, Flood	1, 2	County Engineering Office Essex County Sheriff's Office	FEMA PDM and HMGP, County Budget	Identifies options to alleviate the drainage problems	\$100,000	5 years	Medium	LPR	PR
2020-ESSEX	Potable Water Trailers	Problem: During an event that causes utility interruptions, impacting drinking water supplies	Both	Severe Weather,	1, 6		UASI, County Budget	Provides potable water	\$5,000	2 years	Medium	SIP	PP, ES



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
COUNTY-005 (previous action)		for residents, the County has limited resources to provide potable water. Solution: Purchase three 525-gallon potable water trailers to use in the event drinking water is not available to County residents.		Drought, Wildfire, Utility Interruption		Sheriff's Communication Bureau County Engineering Office		for residents during an outage					
2020-ESSEX COUNTY-006 (previous action)	Voice / Data transmissions at DPW Headquarters	Problem: Inadequate and insufficient communications and capacity at the DPW headquarters location. Solution: Provide redundant methods for Voice/Data transmissions 4G wireless broadband at DPW Headquarters.	Existing	All	1, 6	Sheriff's Communication Bureau, County DPW	UASI, USDA Telecommunications Loan, DHS Emergency Management Performance Grant, County Budget	Increase communication capabilities in the County	\$100,000+	1 year	Medium	SIP	PP, ES
2020-ESSEX COUNTY-007 (previous action)	Install quick-connects for emergency generators at eight County fueling stations	Problem: There are eight fueling stations in Essex County. The stations use generators during utility interruptions but the fuel pumps need to be hard wired in order to work properly. Solution: Install a quick connect system at the fueling stations to allow generators to run the fuel pumps when needed.	Existing	Utility Interruption	1, 2, 6	County Engineering Office	UASI, FEMA HMGP and PDM	Allows portable generators to be used to run fueling stations; provides fuel for emergency vehicles during utility interruptions	\$10,000	2 years	High	SIP	PP, ES
2020-ESSEX COUNTY-008 (previous action)	Install a County-Wide emergency alert system	Problem: Essex County does not have a countywide emergency alert system. Many of the municipalities utilize Nixle to relay emergency alerts to residents who registered. Solution: Research the various countywide alert systems and identify the best one for Essex County. Install a countywide emergency alert system which will increase communication capabilities with residents in the County.	New	All	1, 2, 3, 6	Essex County Sheriff's Office of Emergency Management	UASI, FEMA HMGP and PDM	Provides an alert system that reaches all residents	\$300,000	1 year	High	EAP	PI, ES
2020-ESSEX COUNTY-009 (previous action)	Conduct a functional exercise related to school safety	Problem: Through the years, school safety has evolved and become more complex. Recent tragic events that have occurred in schools across the County has increased the need to provide additional safety training in schools for various incident types (e.g. active shooter, hazardous materials release, explosions). Solution: Exercises are one of the core elements of the preparedness phase of emergency management. The Sheriff's Office will develop	Existing	All	1, 2, 4, 6	Essex County Sheriff's Office	UASI, DHS, School Budget, Staff Time	Increases training and awareness, simulates an incident in the most realistic manner, tests the school's emergency plan before an	\$50,000	3 years	Medium	EAP	PI, ES



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		functional emergency exercises specific to school safety concerns (e.g. active shooter, hazardous materials release, explosions). Once the exercises are developed, the Sheriff's Office will conduct the exercises with schools in the County.						actual emergency occurs					
2020-ESSEX COUNTY-010 (previous action)	Update Transportation Plan	Problem: The current transportation plan does not include a community resiliency element outlined in the County's SRPR. Solution: When updating the County's transportation plan in 2020/2021, a community resiliency element will be incorporated as appropriate. The plan will also incorporate hazard areas identified in the 2020 Essex County HMP and create goals related to reducing impacts to hazards, such as floodplains and areas with steep slopes.	Both	All	5, 6	<u>Division of Planning</u>	County Budget	Increases resiliency	<\$10,000	2 years	High	LPR	PR
2020-ESSEX COUNTY-011 (previous action)	Wildfire Preparedness Plan	Problem: The County currently does not have a wildfire preparedness plan. Additionally, the list of drafting locations in the County is in needed of updating. Solution: Develop a County Multi-jurisdiction Wildfire Preparedness Plan. Identify updated drafting locations in the reservation to ensure accessibility for pump trucks.	Both	Wildfire	1, 2, 4, 5	<u>Essex County Sheriff's Office of Emergency Management</u>	County Budget	Provides a plan to prepare for wildfires and identify water sources to use during a wildfire	\$40,000	5 years	Medium	LPR	PR
2020-ESSEX COUNTY-012 (previous action)	Purchase a brush truck	Problem: The County does not have proper equipment to respond to wildfires. In the event of a wildfire, the County needs to wait for surrounding communities for the State Forest Fire Service to arrive to assist with firefighting. Solution: Purchase a wildfire "brush truck" to combat wildfires within County	Both	Wildfire	1, 2, 6	<u>Essex County Sheriff's Office of Emergency Management</u>	UASI, FEMA Assistance to Firefighters Grant	Provides equipment for wildfires, increases response rate to wildfires	\$100,000	5 years	Medium	SIP	ES
2020-ESSEX COUNTY-013 (previous action)	Passaic River Bridge Crossing	Problem: The County is densely populated. In the event people need to enter or leave Essex County due to a hazard event, there are limited bridge crossings. During emergencies, traffic is extensive and makes it difficult to enter or leave the County in a timely matter. Solution: Work with Hudson County to construct a new Passaic River bridge crossing in the Newark area to relief currently over-burdened bridges and provide additional traffic redundancy in case of another hazard.	Both	All	1, 2, 6	<u>Essex County Department of Public Works, Hudson County</u>	County Budget, Capital Improvements, NJDOT	Provides another route to evacuate the County if needed, reduces traffic	\$1 million+	5+ years	Medium	SIP	ES



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2020-ESSEX COUNTY-014 (previous action)	High Water Vehicles	Problem: High water vehicles are needed to respond during a flood event. While some departments have high water vehicles, more are needed for different departments. There are several County-operated critical facilities that are floodprone (e.g. County Detention Facility) Solution: Acquire additional high water vehicles that will permit ingress/egress of essential personnel and supplies during disasters	Both	Coastal Storm, Flood, Severe Weather	1, 2	Essex County Sheriff's Office of Emergency Management	UASI, County Budget	Continuity of operations during a flood event; provides emergency services to residents	\$100,000+	3 years	Medium	SIP	ES
2020-ESSEX COUNTY-015	Water Tender for County	Problem: There are several areas in the County with limited area fire hydrants. This can create an issue if a fire occurs in areas with limited water resources for firefighting. Solution: Purchase a water tender(s) to assist with firefighting in areas of limited fire hydrants.	Both	Wildfire and Structural Fires	1, 6	Essex County OEM and County Fire Coordinator	UASI, FEMA Assistance to Firefighters Grant	Increase County fire capabilities; life safety; property protection	\$80,000	Within 5 years	Medium	SIP	PP, ES
2020-ESSEX COUNTY-016	Riker Hill Art Park Hydrants	Problem: Identified during a focus group session: Riker Hill Park in Livingston needs additional fire hydrants for firefighting. Solution: Extend the water main to Riker Hill Park to provide proper fire protection to buildings.	New	Wildfire and Structural Fires	1, 6	Essex County OEM with support from Livingston Township officials	County Budget	High	High	Medium	High	SIP	PR, PP
2020-ESSEX COUNTY-017	Natural Gas Generators Inventory	Problem: PSE&G does not have a list of facilities that have natural gas generators. If they have a list, they can provide continuous supply if a planned outage/shut off option is implemented during hazard events. Solution: The County will prepare a list critical facilities that use natural gas generators. The list will be shared with PSE&G and updated as appropriate. This will allow PSE&G to provide natural gas to these critical facilities and allow them to remain operational during utility interruptions.	Both	All	1, 2, 6	Essex County OEM and Essex County DPW	County Budget	Provide an understanding of critical facilities and their need for natural gas during utility interruptions; allow for continuity of operations	\$25,000	Within 2 years	Medium	LPR	PR, ES
2020-ESSEX COUNTY-018	Update Open Space Plan	Problem: The County's <i>Park, Recreation, and Open Space Master Plan</i> was adopted on April 10, 2003. It is currently out of date. Without an updated plan, it impacts the County's capabilities of conducting property acquisitions. Solution: Update the existing <i>Essex County Park, Recreation and Open Space Master Plan</i> to identify locations to acquire properties to turn into open space.	Existing	Flood, Severe Weather	1, 2, 6	Essex County Department of Parks, Recreation and Cultural Affairs	County Budget	Identify potential locations to turn into open space, increases flood storage, increases open space in county (social	\$50,000	Within 4 years	Medium	LPR	PR



Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
								benefits), removes floodprone properties					
2020-ESSEX COUNTY-019	Critical Facility in Floodplain - ESCO Equipment Storage Facility	<p>Problem: The Essex County Sheriff's Office Equipment Storage facility is located at 530 Thomas Blvd. in Orange. The facility is located in the 1% annual chance floodplain. While it does not have a history of flooding or flood damages, by being located in the floodplain, it has the potential of being damaged by future flood events.</p> <p>Solution: The Sheriff's Office will evaluate the storage facility and identify what needs to be mitigated (electrical equipment, supplies, etc.). Once the evaluation is complete and solutions are identified, the Sheriff's Office will implement those solutions. The solutions can include elevating electrical equipment above the base flood elevation, use sand bags to create barrier around facility prior to flood events, and moving equipment prior to flood events to protect from damage.</p>	Existing	Flood	1, 2, 6	Essex County Sheriff's Office	FEMA HMGP or FMA, County Budget	Identify solutions to protect from future flood events	<\$10,000 to perform evaluation; costs to mitigate depend on solutions chosen	Within 2 years	High	LPR, SIP	PR, PP
2020-ESSEX COUNTY-020	Critical Facility in floodplain - Essex County Airport	<p>Problem: The Essex County Airport is operated by the Essex County Improvement Authority. The airport is located in the 1% annual chance floodplain. Being located in the floodplain can make it susceptible to flood-related damages.</p> <p>Solution: The Sheriff's Office will notify the Improvement Authority that the airport is located in the floodplain and determine if the facility is protected from floods. If the facility is not protected, the Sheriff's Office will provide mitigation options that the Improvement Authority can consider protecting the airport's critical assets.</p>	Existing	Flood	1, 2, 6	Essex County Sheriff's Office working with the Essex County Improvement Authority	County Budget	Identify solutions to protect from future flood events; education property owner/operator	<\$10,000	Within 1 year	High	LPR	PR

Notes:

Acronyms and Abbreviations:

CAV Community Assistance Visit
 CRS Community Rating System
 DPW Department of Public Works
 FEMA Federal Emergency Management Agency

Potential FEMA HMA Funding Sources:

FMA Flood Mitigation Assistance Grant Program
 HMGP Hazard Mitigation Grant Program
 PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.



FPA Floodplain Administrator
HMA Hazard Mitigation Assistance
N/A Not applicable
NFIP National Flood Insurance Program
OEM Office of Emergency Management

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- **Local Plans and Regulations (LPR)** – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- **Structure and Infrastructure Project (SIP)** - 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 manmade structures to reduce the impact of hazards.
- **Natural Systems Protection (NSP)** – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- **Education and Awareness Programs (EAP)** – 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 StormReady and Firewise Communities.

CRS Category:

- **Preventative Measures (PR)** - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- **Property Protection (PP)** - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Public Information (PI)** - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- **Natural Resource Protection (NR)** - Actions that minimize hazard loss and preserve or restore the functions of natural systems. Actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Structural Flood Control Projects (SP)** - Actions that involve the construction of structures to reduce the impact of a hazard. Structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Emergency Services (ES)** - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Table 9.1-14. Summary of Prioritization of Actions

Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2020-ESSEX COUNTY-001 (previous action)	Backup power for County facilities	1	1	1	1	1	1	1	0	1	1	1	1	1	0	12	High
2020-ESSEX COUNTY-002 (previous action)	Essex County Traffic Control Transfer Switch generator	1	1	1	1	1	1	1	0	1	1	1	1	1	0	12	High
2020-ESSEX COUNTY-003 (previous action)	Enlarge drainage system on JFK Parkway in Millburn	1	1	1	1	1	1	0	1	0	1	0	0	1	0	9	Medium



Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2020-ESSEX COUNTY-004 (previous action)	Evaluate drainage systems in Essex County	1	1	1	1	1	1	0	1	0	1	0	0	0	0	8	Medium
2020-ESSEX COUNTY-005 (previous action)	Potable Water Trailers	1	0	1	0	1	1	0	0	1	1	1	1	0	0	8	Medium
2020-ESSEX COUNTY-006 (previous action)	Voice / Data transmissions at DPW Headquarters	1	0	1	0	1	1	0	0	1	1	1	1	0	0	8	Medium
2020-ESSEX COUNTY-007 (previous action)	Install quick-connects for emergency generators at eight County fueling stations	1	1	1	1	1	1	0	1	1	1	0	0	1	0	10	High
2020-ESSEX COUNTY-008 (previous action)	Install a County-Wide emergency alert system	1	1	1	1	1	1	0	0	1	1	1	0	0	0	9	High
2020-ESSEX COUNTY-009 (previous action)	Conduct a functional exercise related to school safety	1	0	1	0	1	1	0	0	1	1	0	1	1	0	8	Medium
2020-ESSEX COUNTY-010 (previous action)	Update Transportation Plan	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2020-ESSEX COUNTY-011 (previous action)	Wildfire Preparedness Plan	1	1	1	1	1	1	0	1	1	0	0	0	0	0	8	Medium
2020-ESSEX COUNTY-012 (previous action)	Purchase a brush truck	1	1	1	1	1	1	0	1	1	0	0	0	0	0	8	Medium
2020-ESSEX COUNTY-013 (previous action)	Passaic River Bridge Crossing	1	1	1	1	0	1	0	1	1	1	1	0	0	0	8	Medium
2020-ESSEX COUNTY-014 (previous action)	High Water Vehicles	1	0	0	1	0	1	0	0	1	1	1	1	1	0	8	Medium
2020-ESSEX COUNTY-015	Water Tender for County	1	0	1	1	0	0	0	0	1	1	1	1	0	0	7	Medium
2020-ESSEX COUNTY-016	Riker Hill Art Park Hydrants	1	1	1	1	0	1	0	1	0	1	1	1	0	0	9	High
2020-ESSEX COUNTY-017	Natural Gas Generators Inventory	1	1	1	1	0	1	1	0	0	1	1	0	0	0	8	Medium
2020-ESSEX COUNTY-018	Update Open Space Plan	1	1	1	1	0	1	1	0	0	1	1	0	0	0	8	Medium



Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2020-ESSEX COUNTY-019	Critical Facility in Floodplain - ESCO Equipment Storage Facility	1	1	1	1	1	1	1	0	0	1	0	1	1	0	10	High
2020-ESSEX COUNTY-020	Critical Facility in floodplain – Essex County Airport	1	1	1	1	1	1	1	0	0	1	0	1	1	0	10	High

Notes: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions.
Low (0-4), Medium (5-8), High (9-14).



Table 9.1-15. Analysis of Mitigation Actions by Hazard and Category

Hazard	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Coastal Erosion and Sea Level Rise	-004, -010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Coastal Storm	-010	-006, -013	-008, -009		-006, -008, -009, -013, -014	-003, -006, -013, -014		
Drought	-010	-006, -013	-008, -009		-006, -008, -009, -013	-005, -006, -013		
Earthquake	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Extreme Temperature	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Flood	-004, -010, -019, -020	-006, -013	-008, -009		-006, -008, -009, -013, -014	-003, -006, -013, -014		
Geological	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Severe Weather	-004, -010	-006, -013	-008, -009		-006, -008, -009, -013, -014	-003, -005, -006, -013, -014		
Severe Winter Weather	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Wildfire	-010, -011	-006, -013, -015	-008, -009		-006, -012, -013, -015	-005, -006, -012, -013, -015		
Civil Disorder	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Cyber Attack	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Disease Outbreak	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Economic Collapse	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Hazardous Substances	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Utility Interruption	-010	-001, -002, -005, -006, -013	-008, -009		-001, -002, -005, -006, -007, -008, -009, -013	-001, -002, -005, -006, -007, -013		
Terrorism	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		
Transportation Failure	-010	-006, -013	-008, -009		-006, -008, -009, -013	-006, -013		

Note: Section 6 (Mitigation Strategy) provides for an explanation of the mitigation categories.

9.1.8 Staff and Local Stakeholder Involvement in Annex Development

Essex County followed the planning process described in Section 2 (Planning Process). This annex was developed over the course of several months with input from many County department representatives. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization. The following table summarizes who participated and in what capacity. Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 2 (Planning Process) and Appendix X (Meeting Documentation).



Table 9.1-16. Contributors to the Annex

Name	Title	Method of Participation
Edward Esposito	ECSO – Captain	Reviewed annex, attended meetings, contributed to mitigation strategy
Stephanie Knox	ESCO - Detective	Reviewed annex, attended meetings, contributed to mitigation strategy
Ryan Peter	ECSO – Detective	Reviewed annex, attended meetings, contributed to mitigation strategy
Michael Capodanno	ECSO – Sergeant	Reviewed annex, attended meetings, contributed to mitigation strategy
Sanjeev Varghese	Division of Engineering – Public Works Director and County Engineer	Reviewed annex, attended meetings, contributed to mitigation strategy
Luis Rodriguez	Assistant County Engineer	Reviewed annex, attended meetings, contributed to mitigation strategy
David Antonio	Division of Planning - County Planner	Reviewed annex, attended meetings, contributed to mitigation strategy

ECSO = Essex County Sheriff's Office



Action Worksheet			
Project Name:	Backup power for County facilities		
Project Number:	2020-ESSEX COUNTY-001		
Risk / Vulnerability			
Hazard(s) of Concern:	Utility Interruption		
Description of the Problem:	Several County facilities do not have backup power to provide continuity of operations during a Utility Interruption. These facilities provide essential services to Essex County and its residents.		
Action or Project Intended for Implementation			
Description of the Solution:	Obtain backup power for the following facilities: <ul style="list-style-type: none"> Essex County K9/Bomb building – portable generator OEM Storage/Crime Scene Facility – portable generator 		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Provide continuity of operations to the County during Utility Interruptions
Useful Life:	20 years	Goals Met:	2, 6
Estimated Cost:	\$100,000	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 1 year of receiving funds
Estimated Time Required for Project Implementation:	2 years	Potential Funding Sources:	FEMA HMGP
Responsible Organization:	Essex County Sheriff's Office	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Install solar panels	\$50,000	Weather dependent; not feasible for all facilities
	Install wind turbine	\$20,000	Weather dependent; need open space to install
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Backup power for County facilities	
Project Number:	2020-ESSEX COUNTY-001	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Allow buildings to function during a Utility Interruption
Cost-Effectiveness	1	Benefits of project outweigh the costs
Technical	1	Project is technically feasible and meets the goals of the 2020 HMP
Political	1	
Legal	1	The county has legal authority to implement this project
Fiscal	1	Need funding to complete project
Environmental	0	No negative impacts on the environment
Social	1	No negative impacts on the population
Administrative	1	
Multi-Hazard	1	Utility Interruption and hazard events that lead to Utility Interruptions
Timeline	1	To be completed within 2 years
Agency Champion	1	
Other Community Objectives	0	
Total	12	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Essex County Traffic Control Transfer Switch generator		
Project Number:	2020-ESSEX COUNTY-002		
Risk / Vulnerability			
Hazard(s) of Concern:	Utility Interruption		
Description of the Problem:	The Essex County traffic control transfer switch does not have backup power. During a Utility Interruption, this system cannot function properly and can create a transportation hazard for County personnel and residents.		
Action or Project Intended for Implementation			
Description of the Solution:	Purchase a portable generator to use during a Utility Interruption to operate the County's traffic control transfer switch.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Allow transfer switch to operate during Utility Interruptions
Useful Life:	20 years	Goals Met:	2, 6
Estimated Cost:	\$100,000	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 1 year of receiving funds
Estimated Time Required for Project Implementation:	2 years	Potential Funding Sources:	FEMA HMGP
Responsible Organization:	Essex County Sheriff's Office	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Install solar panel at switch	\$10,000	Weather dependent; not ideal for this type of project
	Install wind turbine	\$10,000	Weather dependent; need open space to install
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Essex County Traffic Control Transfer Switch generator	
Project Number:	2020-ESSEX COUNTY-002	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Allow transfer switch to function during Utility Interruption
Cost-Effectiveness	1	Benefits of project outweigh the costs
Technical	1	Project is technically feasible and meets the goals of the 2020 HMP
Political	1	
Legal	1	The county has legal authority to implement this project
Fiscal	1	Need funding to complete project
Environmental	0	No negative impacts on the environment
Social	1	No negative impacts on the population
Administrative	1	
Multi-Hazard	1	Utility Interruption and hazard events that lead to Utility Interruptions
Timeline	1	To be completed within 2 years
Agency Champion	1	
Other Community Objectives	0	
Total	12	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Evaluate drainage systems in Essex County		
Project Number:	2020-ESSEX COUNTY-004		
Risk / Vulnerability			
Hazard(s) of Concern:	Coastal Storm, Severe Weather, flood		
Description of the Problem:	The drainage systems in the area of Passaic Avenue and Bloomfield Avenue in Verona and JFK Parkway in South Orange become overwhelmed during heavy rain events, leading to flooding of roadways and surrounding properties. This results in road closures, restricting access to these sections of the County.		
Action or Project Intended for Implementation			
Description of the Solution:	Conduct a study to evaluate drainage systems on roadways to reduce the impacts of flooding. The systems include: Passaic Avenue and Bloomfield Avenue in Verona and JFK Parkway in South Orange.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	1% annual chance flood event	Estimated Benefits (losses avoided):	Identifies options to alleviate the drainage problems
Useful Life:	50 years	Goals Met:	1, 2
Estimated Cost:	\$100,000	Mitigation Action Type:	LPR
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Within 1 year of receiving funds
Estimated Time Required for Project Implementation:	5 years	Potential Funding Sources:	FEMA PDM and HMGP, County Budget
Responsible Organization:	County Engineering Office, Essex County Sheriff's Office	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Elevate all structures in the area	\$1 million+	Too costly; not all structures can be elevated
	Acquire all structures	\$1 million+	Too costly; lose tax base
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Evaluate drainage systems in Essex County	
Project Number:	2020-ESSEX COUNTY-004	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	Benefits of project outweigh the costs
Technical	1	Project is technically feasible and meets the goals of the 2020 HMP
Political	1	
Legal	1	
Fiscal	0	Need funding to complete project
Environmental	1	No negative impacts on the environment
Social	0	No negative impacts on the population
Administrative	0	
Multi-Hazard	1	Coastal Storm, Severe Weather, flood
Timeline	0	5 years
Agency Champion	0	
Other Community Objectives	0	
Total	8	
Priority (High/Med/Low)	Medium	



Action Worksheet			
Project Name:	Install quick-connects for emergency generators at eight County fueling stations		
Project Number:	2020-ESSEX COUNTY-007		
Risk / Vulnerability			
Hazard(s) of Concern:	Utility Interruption		
Description of the Problem:	There are eight fueling stations in Essex County. The stations use generators in the event of a Utility Interruption but the fuel pumps need to be hard wired in order to work properly.		
Action or Project Intended for Implementation			
Description of the Solution:	Install a quick connect system at the fueling stations to allow generators to run the fuel pumps when needed.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Allows portable generators to be used to run fueling stations; provides fuel for emergency vehicles during Utility Interruptions
Useful Life:	10 years	Goals Met:	1, 2, 6
Estimated Cost:	\$10,000	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 1 year of receiving funds
Estimated Time Required for Project Implementation:	2 years	Potential Funding Sources:	UASI, FEMA HMGP and PDM
Responsible Organization:	County Engineering Office	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Install solar panels	\$50,000	Weather dependent; not feasible for all facilities; still require a connection to the pumps
	Install wind turbine	\$20,000	Weather dependent; need open space to install
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Install quick-connects for emergency generators at eight County fueling stations	
Project Number:	2020-ESSEX COUNTY-007	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Allows county vehicles to operate during Utility Interruptions and provide emergency services to residents
Property Protection	1	
Cost-Effectiveness	1	Benefits of project outweigh the costs
Technical	1	Project is technically feasible and meets the goals of the 2020 HMP
Political	1	
Legal	1	
Fiscal	0	Need funding to complete project
Environmental	1	No negative impacts on the environment
Social	1	No negative impacts on the population
Administrative	1	
Multi-Hazard	0	Utility Interruption
Timeline	0	To be completed within 2 years
Agency Champion	1	
Other Community Objectives	0	
Total	10	
Priority (High/Med/Low)	High	