



SECTION 6. MITIGATION STRATEGY

This section presents the process by which Essex County will reduce or eliminate potential losses from the natural and non-natural hazards identified in Section 4.2 (Hazard Identification) of this HMP. The mitigation strategy focuses on existing and potential future mitigation actions to alleviate the effects of hazards on Essex County’s population, economy, environment and general building stock.

The Steering Committee reviewed the results of the risk assessment and capability assessment to identify and develop mitigation actions, which are presented herein. This section includes:

1. Background and Past Mitigation Accomplishments
2. General Planning Approach
3. Review and Update of Mission Statement, Mitigation Goals and Objectives
4. Mitigation Strategy Development

Hazard mitigation reduces the potential impacts of, and costs associated with, emergency and disaster-related events. Mitigation actions address a range of impacts, including impacts on the population, property, the economy, and the environment.

Mitigation actions can include activities such as: revisions to land-use planning, training and education, and structural and nonstructural safety measures.

2020 HMP Changes

- The mission statement, goals and objectives were updated to align with County and municipal priorities.
- The capability assessment was moved to Section 5.
- A Strengths, Weaknesses, Obstacles and Opportunities exercise was conducted for the high-ranked hazards to inform the updated mitigation strategy.
- Three stakeholder focus-group sessions were held to obtain a comprehensive understanding of capabilities and problem areas to inform the updated mitigation strategy.

6.1 BACKGROUND AND PAST MITIGATION ACCOMPLISHMENTS

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

- Essex County facilitated the development of the 2015 Essex County HMP. The current planning process represents the regulatory five-year plan update process, which includes participation of the count and 22 jurisdictions in the county, along with key county and regional stakeholders.
- All jurisdictions participating in the HMP update participate in the NFIP, which requires the adoption of FEMA floodplain mapping and certain minimum standards for building within the floodplain.
- Reports, plans, and studies relating to or including information on natural hazards or natural hazard policies affecting Essex County have been reviewed and incorporated into this plan update as appropriate, as discussed in Section 2 (Planning Process), Section 5 (Capability Assessment), Section 9 (Jurisdictional Annexes) and References.
- Essex County and its municipalities continue to apply for FEMA grant funding for mitigation projects in the County. This includes:
 - Purchase and install photovoltaic power generation system at the Department of Public Works (DPW) headquarters located at 900 Bloomfield Avenue in Verona



- Purchasing 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.
- Essex County DPW continues to rehabilitate bridges that require structural work. Center Street Bridge in Nutley and Lyons Ave. Bridge in Irvington have been completed. The County has funds to complete Hoover Ave. bridge in Bloomfield, Cherry Hill bridge in Millburn, and Dougall Street bridge in West Caldwell.
- The County is working on improving drainage systems and upgrading culverts of County-owned roadways throughout the County. This includes enlarging the drainage system on Bloomfield Ave. in Verona which is an evacuation route for the County and stream culvert work in residential areas in the Eagle Rock Reservation area (Afterglow Road, Ravine Road, and Cole Road).
- Essex County provides 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 Strategic Recovery Planning Report (SRPR) (August 27, 2014): This plan was prepared as part of the New Jersey Department of Community Affairs' Post Sandy Planning Assistance Grant Program. The plan provided a recommendation of projects, categorized as hazard mitigation or preparedness. 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.
 - 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.
- Passaic River Basin Climate Resilience Planning Study (June 27, 2019): The North Jersey Transportation Planning Authority (NJTPA) developed this study to evaluate the vulnerability of the Passaic River Basin transportation assets to climate change events and identify adaptation strategies for agencies and municipalities to integrate resiliency into their transportation networks. The study area included Essex County. Adaptation strategies were identified for highly vulnerable and critical transportation assets in the County. Many of the recommended strategies identified are already being done or in the progress of being implemented in 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.

6.2 GENERAL MITIGATION PLANNING APPROACH

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

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



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

- Section 6.3 – Strengths, Weaknesses, Obstacles and Opportunities (SWOO) exercise
- Section 6.4 – Stakeholder Focus Group Sessions
- Section 6.5 – Review and update the mission statement, mitigation goals and objectives
- Section 6.6 – Prepare an implementation strategy, including:
 - Identification of progress on previous County and local mitigation strategies
 - Development of updated County and local mitigation strategies, and
 - Prioritization projects and initiatives in the updated mitigation strategy

6.3 STRENGTHS, WEAKNESSES, OBSTACLES AND OPPORTUNITIES EXERCISE

The Steering and Planning Committees participated in a facilitated SWOO session to identify strengths, weakness or challenges, obstacles and opportunities in hazard mitigation for the County’s high-ranked hazards. Each of these hazards were discussed during the September 2019 session and each jurisdiction was asked to complete a SWOO worksheet to document strengths, weaknesses, obstacles and opportunities relevant to their jurisdiction for their high-ranked hazards. SWOO results were recorded to assist with the update to the County’s mitigation strategy. The discussion of each hazard began with identifying County, municipal and stakeholder strengths to mitigate the risk and potential future impacts of these hazards. Next, the weaknesses, challenges and obstacles the planning area faces to reduce each hazard’s risk were identified. To conclude the discussion of each high-ranked hazard, the meeting attendees were asked to identify potential opportunities for enhanced mitigation. The following summarizes the five general categories of potential opportunities identified during the session. Refer to Appendix X which provides the information captured for each hazard during the SWOO session.

- Address challenges with financial resources
- Address challenges with staffing resources (both employed or contracted, and volunteer)
- Increase public awareness
- Increase and enhance local capabilities
- Reduce vulnerability

6.4 STAKEHOLDER FOCUS GROUP SESSIONS

As discussed in Section 2 (Planning Process), the County hosted three stakeholder focus-group sessions to gather input from invited stakeholders, along with the Steering and Planning Committee members. These included 1) Utilities (water and wastewater); 2) Multi-modal Transportation; and 3) Green Infrastructure/Climate Change. The goal of each workshop was to identify the following for each sector:

- Capabilities Essex County has that contributes to the reduction of risk such as plans, ordinances, administrations, and projects;
- Problem areas that represent vulnerabilities/gaps/challenges within the County; and
- Potential actions or projects that could be undertaken to increase the County's resilience and decrease the County's risk to future hazard events.

In addition, sector-specific surveys were distributed to a larger audience to gather a comprehensive knowledge-base of capabilities, problems and potential mitigation actions. Information gathered during these sessions was shared with all plan participants and used to inform the updated mitigation strategy development. Refer to Appendix X for a complete listing of focus-group attendees and meeting notes.

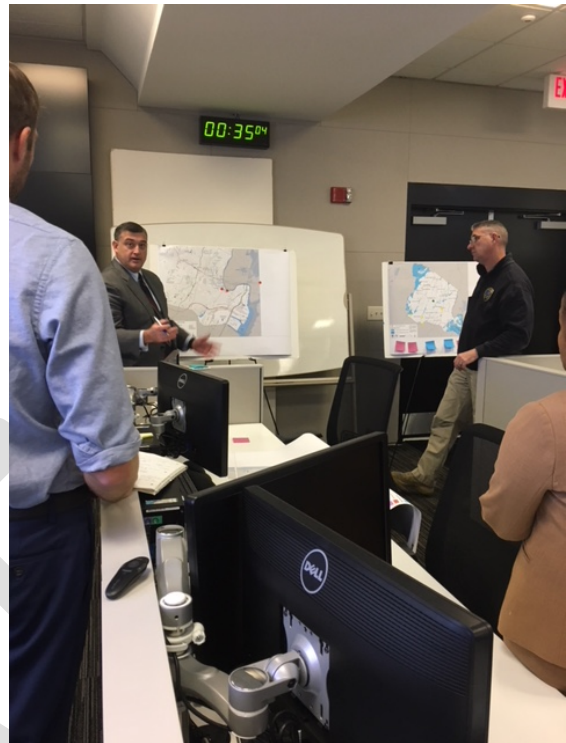


Exhibit 6-1. Map Exercise with Focus Group Session Participants



6.5 REVIEW AND UPDATE OF MISSION STATEMENT, MITIGATION GOALS AND OBJECTIVES

This section documents the County’s efforts to develop hazard mitigation goals and objectives that are established to reduce or avoid long-term vulnerabilities to the identified hazards.

6.5.1 Mission Statement

Per FEMA guidance (386-1), a mission statement or guiding principle describes the overall duty and purpose of the planning process, and serves to identify the principle message of the plan. It focuses or constrains the range of goals and objectives identified. This is not a goal because it does not describe outcomes. Essex County’s mission statement is broad in scope, and provides a direction for the HMP.

The 2015 HMP mitigation strategy, inclusive of the 2015-identified mission statement was first examined at the July 2019 Steering Committee and Planning Committee kickoff meeting. During the 2020 HMP update planning process, the Steering and Planning Committees were provided the opportunity to comment on the mission statement as well as the goals, objectives and provide a status update on the mitigation actions. In October 2019, the Steering Committee reviewed the mission statement and enhanced it to include resilience. The revised mission statement was presented to and approved by the Planning Committee. The 2020 HMP mission statement is as follows:

Through strategic planning, partnerships and collaboration, identify and reduce the vulnerability and increase the resiliency to the current and future effects of natural and human caused hazards in order to protect the health, safety, quality of life, environment, and economy of all people and all communities within Essex County.

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

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

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

6.5.2 Goals and Objectives

According to CFR 201.6(c)(3)(i): “The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.” The mitigation goals were developed based on the risk assessment results, discussions, research, and input from the Steering and Planning Committees, existing authorities, polices, programs, resources, stakeholders, and the public.

As previously noted, the Steering and Planning Committees first examined the goals and objectives at the July 2019 kickoff meeting and were provided the opportunity to comment. In October 2019, the Steering Committee updated the 2015 goals and objectives based on the risk assessment results, discussions, research, and input from amongst the Steering Committee, goals and objectives in the State of New Jersey 2019 HMP, existing authorities, polices, programs, resources, stakeholders and the public. The updated goals and objectives were presented to the Planning Committee for review and were approved at the October 24, 2019 Mitigation Strategy Workshop. For the purposes of this plan, goals and objectives are defined as follows:

Goals are general guidelines that explain what is to be achieved. They are broad, long-term, policy-type statements that represent global visions. Goals help define the benefits that the plan is trying to achieve. The



success of the plan, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of hazard mitigation).

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

The goals and objectives update provides clear guidelines for how the County and municipalities can move forward to best manage their hazard risk. Amendments include additions and edits to goals and objectives to express the plan participants’ interests in integrating this plan with other planning mechanisms/programs and to support mitigation through the protection and preservation of natural systems, incorporate resilience of lifelines, and integrate green infrastructure.

As a result of this review process, the goals and objectives for the 2020 update were amended, as presented in Table 6-1. *Italicized* text indicates the updates made to the goals and objectives. Appendix X presents the 2015 mission statement, goals and objectives and the evaluation feedback from the Steering Committee.

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

Goals	Objectives
Goal 1: Protect Life	Objective 1.1: Improve warning and emergency communication systems
	Objective 1.2: Reduce the impacts of hazards on people, property, and vulnerable populations
	<i>Objective 1.3: Integrate the hazard mitigation plan into existing county and local planning, building, codes, ordinances, and enforcement.</i>
Goal 2: Protect Property	<i>Objective 2.1: Protect and increase resilience of critical facilities and lifelines to reduce disruption of essential activities during and after a hazard event.</i>
	Objective 2.2: Reduce repetitive and severe repetitive losses
	Objective 2.3: Protect environmental resources that serve a natural hazard mitigation function
	<i>Objective 2.4: Encourage cost-effective and environmentally-sound development and land use by incorporating green infrastructure</i>
Goal 3: Increase public preparedness and awareness	<i>Objective 3.1: Enhance and implement public education and outreach programs to increase awareness of hazard risks</i>
	Objective 3.2: Improve hazard information databases and maps and increase accessibility to those resources
	<i>Objective 3.3: Provide stakeholder training on mitigation and resilience-related topics to support the identification and implementation of projects and access to funding</i>
	<i>NEW Objective 3.4: Improve education of public officials, stakeholders, and the general public regarding the impacts of future conditions, sea level rise, and climate change on people, property, transportation assets, and the economy.</i>
Goal 4: Increase the understanding and awareness of risks from hazards	Objective 4.1: Review and incorporate updated hazard data into the County Hazard Mitigation Plan and other county and local planning mechanisms
	Objective 4.2: Increase support for the development of local mitigation planning and projects
	Objective 4.3: Incorporate new State and FEMA guidance, rules and regulations into the Plan
	<i>NEW Objective 4.4: Strengthen understanding of, and adaptation to, a changing climate</i>
Goal 5: Enhance County and local mitigation capabilities to reduce hazard vulnerabilities	<i>Objective 5.1: Implement and monitor the progress of on-going mitigation activities within the county</i>
	Objective 5.2: Encourage and support additional related training and education of public officials
	Objective 5.3: Encourage the formation of partnerships to leverage and share mitigation resources
	Objective 5.4: Integrate the County Hazard Mitigation Plan with other County, regional and local planning initiatives



Goals	Objectives
Goal 6: Support continuity of operations pre-, during and post- hazard events	<i>Objective 6.1: Ensure continuity of operations of essential county government services through training, planning and implementation of mitigation strategies</i>
	<i>Objective 6.2: Increase resiliency by facilitating rapid disaster recovery ensuring that post-disaster efforts incorporate mitigation and adaptation strategies to minimize future losses.</i>
	<i>Objective 6.3: Support and encourage the implementation of alternative and sustainable energy sources</i>

6.6 MITIGATION STRATEGY DEVELOPMENT AND UPDATE

6.6.1 Review of 2015 HMP Mitigation Action Plan

To evaluate progress on local mitigation actions, the planning consultant met with each participant to discuss the status of the mitigation actions identified in the 2015 plan. For each action, jurisdictions were asked to provide the status of each action (*No Progress, In Progress, Ongoing Capability, Discontinue, or Completed*) and provide review comments on each. Jurisdictions were requested to quantify the extent of progress and provide reasons for the level of progress or why actions were being discontinued. Each jurisdictional annex in Section 9 (Jurisdictional Annexes) provides a table identifying the jurisdiction’s prior mitigation strategy, the status of those actions and initiatives, and their disposition within their updated strategy.

Local mitigation actions identified as *Complete*, and those actions identified as *Discontinued*, were removed from the updated strategies. Local mitigation actions identified as an *Ongoing Capability* were incorporated into the capability assessment of each jurisdictional annex. Those actions identified as *No Progress* or *In Progress* that remain a priority for the jurisdiction, have been carried forward into the updated mitigation strategy.

Beginning in June 2019, even prior to the official kickoff meeting due to the accelerated schedule, the planning consultant worked directly with each jurisdiction (phone, email, local support meetings) to assist with the development and update of their annex and include mitigation strategies, focusing on identifying well-defined, implementable projects with a careful consideration of benefits (risk reduction, losses avoided), costs, and possible funding sources (including mitigation grant programs).

At the July 2019 kickoff meeting and during subsequent local-level planning meetings, all participating jurisdictions were further surveyed to identify mitigation activities completed, ongoing, and potential/proposed. As new potential mitigation actions, projects, or initiatives became evident during the plan update process, including as part of the risk assessment update and as identified through the public and stakeholder outreach process detailed in Section 2 (Planning Process), communities were made aware of these either through direct communication (local meetings, email, phone), at Steering and Planning Committee meetings, or via their draft municipal annexes.

6.6.2 Identification and Analysis of Mitigation Techniques

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

- Local Plans and Regulations—These actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.

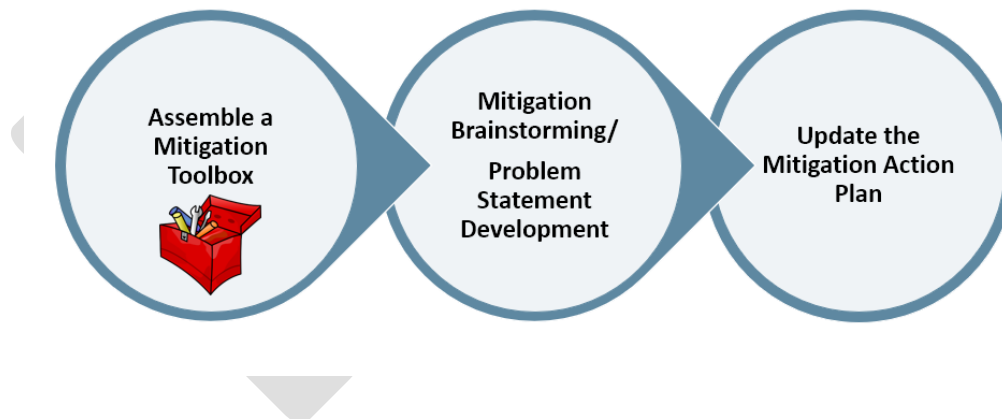


- **Structure and Infrastructure Projects**—These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures, as well as critical facilities and infrastructure. This type of action involves projects to construct manmade structures to reduce the impact of hazards.
- **Natural Systems Protection**—These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- **Education and Awareness Programs**—These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions could include participation in national programs, such as the National Flood Insurance Program and Community Rating System, StormReady (NOAA), and Firewise (NFPA) Communities.

6.6.3 2020 HMP Mitigation Action Plan

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

A mitigation strategy workshop was conducted by the contracted planning consultant on October 24, 2019, for all participating jurisdictions to support the development of the updated mitigation strategy. To assist with the identification of implementable and action-oriented mitigation actions, a three-step process was followed for the 2020 HMP update: 1) Assemble a ‘mitigation toolbox’; 2) Identify problem statements through ‘mitigation brainstorming’ and 3) Update the mitigation action plan. This section describes the process followed by the County and municipalities to develop the 2020 updated mitigation action plan.



The concept of a ‘mitigation toolbox’ was introduced to the Planning Partnership at the September 19, 2019 risk assessment meeting. A mitigation toolbox contains numerous resources available to the County and participating municipalities to assist with the development of an updated mitigation action plan. This toolbox was referred to throughout the 2020 HMP mitigation strategy update and will continue to serve as a resource over the plan performance period. The toolbox contains, but is not limited to, the following and will be continuously added to over time:

- 2020 HMP mission statement, goals and objectives
- 2015 HMP Mitigation Strategy
- Risk assessment results



- Capability assessment results
- Outcomes of the SWOO
- Outcomes of the Stakeholder Focus Group Sessions
- Mitigation Catalog
- Subject-matter expertise
- Stakeholder and public input (e.g., citizen survey results, survey results from Senior Wellness event)
- Existing plans/policies/programs
- FEMA resources (e.g., Mitigation Ideas).

As discussed in Section 2 (Planning Process) and earlier in this section, the September 19, 2019 risk assessment meeting and individual jurisdiction meetings were focused on understanding risk and capabilities and identify gaps in capabilities, challenges and opportunities. This provided context for the next steps in the update of the mitigation strategy and inform the Planning Partnership of the available resources in their ‘toolbox.’

At the October 2019 mitigation strategy workshop, the Planning Partnership focused problem statements based on the impacts of hazards in the County and their communities. The results of the updated risk assessment, challenges and opportunities identified during the capability assessment update and SWOO sessions, and information gathered from the citizen survey were used to inform problem statement development. At the workshop, the Planning Partnership broke up into small groups and round-table discussions took place so municipalities could understand each other’s problem statements and share either what others have done to address the problem, or help brainstorm what the best mitigation action is to address. Information gathered from the stakeholder focus-group sessions in November was also shared with the Planning Partnership to further inform the updated mitigation strategy development.

As a result, problem statement worksheets were developed to detail the problems/challenges/gaps/identified vulnerabilities the jurisdiction faces, then mitigation alternatives evaluated to best reduce future risk and address the identified problem. These problem statements were intended to provide a detailed description of the problem area, including impacts to the jurisdiction, past damages, and loss of service. These problem statements helped form a bridge between the hazard risk assessment, which quantifies impacts to each community, with the development of achievable mitigation strategies.

A strong effort has been made to better focus local mitigation strategies to clearly defined, readily implementable projects and initiatives that meet the definition or characteristics of mitigation. Broadly defined mitigation actions were eliminated from the updated strategy unless accompanied by discrete actions, projects, or initiatives.

Certain continuous or ongoing strategies that represent programs that are fully integrated into the normal operational and administrative framework of the community have been identified within the capabilities section of each annex and removed from the updated mitigation strategy.

Municipalities included mitigation actions to address vulnerable critical facilities located within the floodplain. For those facilities, each municipality was asked to identify the status of mitigation: already mitigated and how/to what flood level, reason for not mitigating (e.g. do not have the jurisdiction to mitigate), or the proposed mitigation number included in the proposed mitigation action table in each annex. It is recognized, however, that in the case of projects being funded through federal mitigation programs, the level of protection can be influenced by cost-effectiveness, as determined through a formal benefit-cost analysis. In the case of “self-funded” projects, municipal discretion must be recognized. Further, the County and municipalities have limited authority over privately-owned critical facility owners regarding mitigation at any level of protection.



Throughout the course of the plan update process, additional regional and county-level mitigation actions were identified by the following processes:

- Review of the results and findings of the updated risk assessment.
- Review of available regional and county plans reports and studies;
- Direct input from county departments and other county and regional agencies, including:
 - Essex County Sheriff's Office
 - Essex County Office of Emergency Management
 - Essex County Department of Public Works
 - Essex County Division of Planning
- Input received through the public and stakeholder outreach process.

6.6.4 Mitigation Best Practices

Catalogs of hazard mitigation best practices were developed that present a broad range of alternatives to be considered for use in Essex County, in compliance with 44 CFR Section 201.6(c)(3)(ii). One catalog was developed for each natural hazard of concern evaluated in this plan; referred to as the Mitigation Catalog (Appendix X). The catalogs present alternatives that are categorized in two ways:

- By whom would have responsibility for implementation:
 - Individuals – personal scale
 - Businesses – corporate scale
 - Government – government scale
- By what each of the alternatives would do:
 - Manipulate the hazard
 - Reduce exposure to the hazard
 - Reduce vulnerability to the hazard
 - Build local capacity to respond to or be prepared for the hazard

The alternatives presented include actions that will mitigate current risk from hazards and actions that will help reduce risk from changes in the impacts of these hazards resulting from climate change. Hazard mitigation actions recommended in this plan were selected from among the alternatives presented in the catalog, as well as other resources made available to all jurisdictions (i.e., FEMA's Mitigation Ideas). The catalog provides a baseline of mitigation alternatives that are backed by a planning process, are consistent with the established goals and objectives, and are within the capabilities of the planning partners to implement. Some of these actions may not be feasible based on the selection criteria identified for this plan. The purpose of the catalog was to provide a list of what could be considered to reduce risk from natural hazards within the planning area. Actions in the catalog that are not included for the partnership's action plan were not selected for one or more of the following reasons:

- The action is not feasible
- The action is already being implemented
- There is an apparently more cost-effective alternative
- The action does not have public or political support.

6.6.5 Mitigation Strategy Evaluation and Prioritization

Section 201.c.3.iii of 44 CFR requires an action plan describing how mitigation actions identified will be prioritized. The County and participating jurisdictions utilized a modified STAPLEE (Social, Technical,



Administrative, Political, Legal, Economic, and Environmental) mitigation action evaluation methodology based on a set of evaluation criteria suited to the purposes of hazard mitigation strategy evaluation. This method provides a systematic approach that considers the opportunities and constraints of implementing a specific mitigation action.

The Steering Committee applied an action evaluation and prioritization methodology, which includes an expanded set of 14 criteria to include the consideration of cost-effectiveness, availability of funding, anticipated timeline, and if the action addresses multiple hazards. The 14 evaluation/prioritization criteria used in the 2020 update process is the same used in the 2015 plan:

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

Participating jurisdictions were asked to use these criteria to assist them in evaluating and prioritizing mitigation actions identified in the 2020 update. Specifically, for each mitigation action, the jurisdictions were asked to assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria, defined as follows:

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

Further, jurisdictions were asked to provide a summary of the rationale behind the numeric rankings assigned, as applicable. The numerical results were totaled and then used by each jurisdiction to help prioritize the action or strategy as *Low*, *Medium*, or *High*. Actions that had a numerical value between 0 and 4 were categorized as *low*; actions with numerical values between 5 and 9 were categorized as *medium*; and actions with numerical values between 10 and 14 were categorized as *high*. While this provided a consistent, systematic methodology to support the evaluation and prioritization of mitigation actions, jurisdictions might have additional considerations that could influence their overall prioritization of mitigation actions.



For the plan update there has been an effort to develop more clearly defined and action-oriented mitigation strategies. These local strategies include projects and initiatives that are seen by the community as the most effective approaches to advance their local mitigation goals and objectives within their capabilities. In addition, each municipality was asked to develop problem statements. With this process, participating jurisdictions were able to develop action-oriented and achievable mitigation strategies.

6.6.6 Benefit/Cost Review

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

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

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

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

When possible, jurisdictions were asked to identify the actual or estimated dollar costs and associated benefits. Often numerical costs and/or benefits were not identified and may be impossible to quantify. In this case, jurisdictions were asked to evaluate project cost-effectiveness using *high*, *medium*, and *low* ratings. Where estimates of costs and benefits were available, the ratings were defined as the following:

Low \leq \$10,000 Medium = \$10,000 to \$100,000 High \geq \$100,000

Where quantitative estimates of costs and/or benefits were not available, qualitative ratings using the following definitions were used:

Table 6-2 Qualitative Cost and Benefit Ratings

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



Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low) are considered cost-effective. For some of the Essex County initiatives identified, the planning partnership might seek financial assistance under FEMA’s HMA programs. These programs require detailed benefit/cost analysis as part of the application process. These analyses will be performed when funding applications are prepared, using the FEMA benefit/cost analysis model process. The planning partnership is committed to implementing mitigation strategies with benefits that exceed costs. For projects not seeking financial assistance from grant programs that require this sort of analysis, the planning partnership reserves the right to define “benefits” according to parameters that meet its needs and the goals and objectives of this plan.

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