



May 22, 2020

Climate and Flood Resilience Program
New Jersey Department of Environmental Protection
501 East State Street
Trenton, New Jersey 08625-0419

VIA Email to: climateresilience@dep.nj.gov

RE: Comments for consideration in the development of the New Jersey Climate Change Resilience Strategy and Coastal Resilience Plan

To members of the Climate and Flood Resilience Program,

Thank you for the opportunity to provide comments and input to the New Jersey Climate Change Resilience Strategy presented at the Virtual Information Session on May 7, 2020. The New Jersey Coastal Resilience Collaborative is a partnership of stakeholders and interested parties from all sectors, including state and private universities, non-profit and for-profit groups, national estuary programs and reserves, advocacy groups, state agencies and regional planning groups, established to foster sustainable and resilient coastal communities and ecosystems by generating informed action. We appreciate the thoughtfulness that has gone into the proposed structure of the Climate Change Resilience Strategy and imbedded Coastal Resilience Plan. We applaud the Program for its commitment to developing a science-based, forward-looking strategy that includes coordinated governance, local and regional action, and an investment in nature.

As the Climate Change Resilience Strategy develops, we encourage the State to consider actions that the State can take to develop and implement resilience policies, regulations, and frameworks at the State level and in support of local communities. To aid in the development of implementable action, we offer the attached report outlining State actions and actions that the State can take to improve municipal resilience. The report is comprised of three sections: the first listing actions that the State can take through planning, regulation, finance and construction, and ecological restoration and adaptation; the second listing actions that the State and municipalities can take to improve municipal resilience; and the third providing a more detailed rationale for the State supported municipal actions.

Many of the actions identified in this report can utilize the authorities and established mechanisms of the State's coastal protection laws, including the Coastal Area Facilities Review Act, the Tidal and

Freshwater Wetlands Acts, the Waterfront Development Act, Flood Hazard Control Act, and various authorities governing submerged tide lands and stormwater management. Additionally, the State's authorities over water quality control, the location and development of water supply, and water pollution control infrastructure, similarly provide immediately available approaches to implement many of the actions herein. Finally, the State Plan and the authorities of the State Planning Commission can greatly influence growth patterns, resiliency and the implementation of policies by municipalities and other public entities.

The attached report developed by the partners of the NJ Coastal Resilience Collaborative does not represent the views of all of the collaborative partners or indicate support for every action contained within the report by every partner. We hope that you find the report constructive, and that this document represents the beginning of a process in which stakeholders and the State can work cooperatively over time to refine and adjust the NJ Climate Change Resilience Strategy and Coastal Resilience Plan as they evolve.

Sincerely,

Signed on Behalf of the NJ Coastal Resilience Collaborative Co-Chairs

Thomas O Herrington
p.p.

Tim Dillingham

Anthony MacDonald

Edward Mahaney



State Actions Recommendation Comments to NJDEP Climate Change Resilience Strategy

I. Planning

- a. The State is encouraged to establish a clear and consistent definition of resilience. Resilience is often used interchangeably with adaptation, mitigation, and climate change. The State is encouraged to define the relation between each concept.
 - i. The New Jersey Coastal Resilience Collaborative (NJ CRC) defines *resilience* as the capacity of coastal communities to adapt to changing conditions.
- b. The State is encouraged to develop detailed measures for achieving the broad goals established in the Climate Change Resilience Strategy for resilience.
 - i. State-level plans are encouraged to have a common state vision for resilience, develop standardized resilience measures rooted in science, and provide guidance to ensure harmony in planning efforts, programs, and policies.
 - ii. The State is encouraged to focus growth in safe redevelopment areas and avoid allowing new development in harm's way (such as in flood zones).
 - iii. Plans are encouraged to reflect investment frameworks that consider *projected* climate risk and to direct development away from areas expected to experience impacts of sea level rise and flooding in an 80-year time horizon.
- c. All State agencies are encouraged to have a resilience-in-all policies goal and include resilience considerations in all decision making and permitting (e.g., DCA, COAH, DOT, DEP).
 - i. Intergovernmental Agency recommendations
 1. Work with the Council on Affordable Housing (COAH) to ensure that environmental constraints are considered in allocations.
 2. Work with the State Agriculture Development Committee (SADC) to expand farmland preservation easement regulations to be adaptable to changing climate conditions and the potential changes in agricultural management practices which may be required to keep New Jersey's farms sustainable
 3. Work across agencies to identify socially vulnerable and environmental justice communities, so that there is a shared

understanding of the communities and populations who are most impacted by climate change and a coordinated approach across government agencies can be taken to reduce the risk to these communities through planning and prioritized investment in hazard mitigation and climate adaptation.

- d. General resilience policies
 - i. Restrict eligibility for sewer service area designation under Water Quality Management Plans (WQMPs) in current and future flood prone areas.
 - ii. Restrict public resource funding of new infrastructure investments in current or future flood prone areas as they encourage growth.
 - iii. Eliminate current and future flood prone areas from growth area designation in the State Plan Policy.
 - 1. If the State Plan and State Plan Policy Map were updated to reflect climate change risk, it could provide State Agencies with a roadmap for identifying where future public investment for growth should be invested.
 - 2. Map, with limited flexibility, locations for important economic growth opportunities that are water dependent and have higher risk tolerance.
 - iv. Include New Jersey bayfronts (e.g., Raritan & Delaware bays), not just the oceanfront in the Coastal Resilience Plan.
 - v. To the extent practical, the State is encouraged to consider how reforms to the Coastal Area Facility Review Act and WQMPs can be used to implement the changes recommended by the Climate Change Resilience Strategy and Coastal Resilience Plan.
- e. Encourage regional efficiencies (e.g., shared services)
 - i. Encourage communities to participate in regional resilience planning processes and projects (NJFRAMES, BBP, JC NERR, ResilientNJ, and county efforts) by providing incentives and technical assistance for municipalities.
- f. Socioeconomic aspects of planning and social justice
 - i. The State is encouraged to consider social and economic impacts while planning for resilience.
 - ii. Consider equity issues in state and federal programs that the State manages and/or supports (e.g., FEMA hazard mitigation plans, CRS, NFIP, etc.).
 - iii. Ensure that when the State promotes shared responsibilities it does not become a mandate without funding.
- g. Encourage adaptive planning at the municipal level
 - i. The State is encouraged to develop model ordinances and land use actions to encourage municipalities to plan for the future through adaptive zoning regulations in areas not currently in the special flood hazard area but for

which modelling suggests are in areas of concern for future flooding or the migration of wetlands or coastal shorelines.

- ii. Working waterfronts and coastal natural-area buffers should be addressed in local planning and resilience plans.
- iii. Encourage resilient zoning (e.g., TDRs) through the incorporation of resilience in plan endorsement.
- iv. Encourage municipalities to plan for sea level rise adaptation by considering retreat strategies and limiting redevelopment in V zones.

II. Construction

- a. Coastal protection/adaptation projects should receive funding from multiple sources to promote local responsibility, demonstrate prioritization, and an integrated approach.
 - i. Increase revenue from local and private sources for the Shore Protection Fund.
 - ii. Prioritize all proposed coastal resilience projects using a standardized method with a focus on protecting year-round communities in areas of lower flood hazard exposure.
 - iii. Prioritize coastal resilience projects that protect critical state infrastructure that cannot be relocated.
- b. Incorporate factors in project prioritization that include aspects in addition to the traditional benefit-cost analysis based solely on property/infrastructure value.
 - i. Additional factors to consider include:
 1. Societal and economic value for ecological resources,
 2. Positive and negative impacts to vulnerable populations, and
 3. Encouraging public access.
- c. Condition state aid for construction projects on the benefiting municipality's implementation of mitigating and adaptive land use practices, including buyouts and regulations that restrict construction, participation in state planning efforts (e.g., endorsement), financing, and No Adverse Impact (where one's property rights cannot negatively impact another's property rights).
- d. Develop a statewide flood risk management standard that sets progressive and aggressive floodplain management standards for infrastructure projects, especially those involving state funding. Additionally, such standards should set criteria for where projects can be sited.

III. Finance

- a. All applications requesting state discretionary funds should be evaluated with consideration of the project's location in coastal flood hazard areas (see also Planning section b.).

- i. Condition awards of state discretionary funds on a project's ability to withstand or protect against flooding to a greater degree than the existing infrastructure in Special Flood Hazard Areas. [For example, NJDOT Municipal Aid grants for road repaving should result in roads that are at a higher elevation than the road being replaced, or not be funded by the State at all.]
- b. Develop alternative funding avenues for coastal resilience projects that capture the value of floodplain economic activity [e.g., real estate sales] to fund resilience projects in vulnerable areas (see also Construction section a.).
- c. Promote the use of green bonds and innovative financing methods to sustainably invest in vulnerable infrastructure.
- d. Financial viability of projects sited in coastal flood zones should include an assessment of additional cost related to rising sea levels.
 - i. The cost-benefit analysis for projects taking place in coastal flood zones should require a longer project lifecycle to account for higher future sea levels to ensure that investment is directed towards viable and adaptive communities.
 - ii. Promote an economic development framework that facilitates the relocation of existing economic activity inland to less-vulnerable areas as sea levels rise.
- e. Create policy and financial strategies that promote the relocation of vulnerable properties and infrastructure out of harm's way (see also Planning section b.).
 - i. Encourage communities to establish policies and identify funding sources for targeted buyouts after repetitive loss.
 - ii. Recovery efforts in highly vulnerable areas should be funded by tying funding availability to risk.
 - iii. Ensure insurance penetration for private and community assets.
 - iv. Establish pre-disaster recovery plans that identify and socialize policies that do not encourage rebuilding in harm's way.
- f. Attract and secure private sector investment (particularly from the insurance and reinsurance industry) in mitigation projects to increase skin in the game and funding available for projects (see also Construction section a.).

IV. Ecological Restoration and Adaptation

- a. General
 - i. The state is encouraged to create a statewide vision and set of measurable goals established to frame ecological, adaptation and restoration for resilience.

- ii. A “forward looking” Climate Change Resilience Strategy is commendable and the State is encouraged to clearly state that everything will not happen at once and identify steps that should be implemented by the State over time.

b. Monitoring

- i. The State is encouraged to establish or expand upon existing “Ecological monitoring observatories” throughout the various geographies of the State to monitor ongoing ecological changes due to climate change. These observatories should take a multidisciplinary comprehensive ecosystem approach using standardized methodologies (e.g., <https://www.conservationgateway.org/ConservationPractices/Marine/crr/library/Documents/Framework-Coastal-Wetland-Shoreline-Projects-New-Jersey.pdf>) to produce usable and comparable data that has value to the state.
 - 1. Examples of similar existing programs include the network of long-term monitoring sites for coastal wetlands (MACWA Site Specific Intensive Monitoring – NJ Tidal Wetlands Monitoring Network) and the long-standing Beach Profiling Network.
 - 2. In addition to providing valuable long-term data, these stations would also help to secure future funding, informing adaptive management, expanding citizen involvement/science/stewardship/, encouraging community engagement, promoting outreach, and facilitating environmental justice involvement.
 - 3. Specific attention should be focused on identifying gaps, as well as additional monitoring needed.

c. Restoration

- i. The State is encouraged to inform coastal restoration by the cultural and ecological history of native ecosystems in an area as well as predicted environmental change.
- ii. The State is encouraged to focus restoration and enhancement by promoting self-sustainable services from coastal habitats able to persist under changing environmental conditions.
- iii. The State is encouraged to include clear goals in coastal restoration plans that identify the anticipated ecological and anthropogenic services the project is expected to provide.
 - 1. These goals should foster holistic ecosystem functionality and sustainability by considering relevant ecological interactions in the habitat of interest.
- iv. The State is encouraged to include adaptive management strategies in restoration plans that will provide tactical flexibility should sustained functionality not be possible under appropriate timeframes.
- v. The State is encouraged to reference and promote the use of regionally-developed collaborative Guidance Documents. These documents should

have a clear connection to encouraging ecological restoration using appropriate methodologies.

- vi. The State is encouraged to account for transgressive trajectories of habitats of interest. Specifically:
 - 1. Marshes and dunes of tomorrow – limiting and or restricting development to allow for transgression. This ties directly into “Moving to Safer Areas” strategy.
 - 2. In developed areas where marsh migration is not possible, upland adjacent areas should be preserved and protected with the same level of protection that wetland and coastal resources receive.
- vii. The State is encouraged to promote restoration projects that recognize and acknowledge the interests and contributions of diverse stakeholders, particularly local stakeholders, and actively seek their direct involvement to provide mutual benefits to both nature and society.
- viii. Opportunities for restoration projects along energetic urban corridors should not be excluded from consideration for ecological applications, but the level of armoring needs to be balanced with an appropriate level of ecological uplift.
- ix. NJDEP is encouraged to continue to seek funding and improvement to the Coastal Ecological Restoration and Adaption Plan (CERAP) and continue ongoing work with project partners.

d. Permitting and Planning

- i. While we acknowledge that habitat restoration planning, permitting and implementation must evolve as conditions and species change, there are broad protections that can be built into the State’s vision for the future. Primarily, we agree that:
 - 1. Post-Disaster Recovery/Redevelopment planning and related policies must be developed and put into place in such a way that recognizes future ecological conditions and reduces the ability to rebuild back to vulnerable pre-disaster conditions (see also Finance section e. iv.).
 - 2. The Plan should provide clarity on how the State is going to utilize their authorities to emphasize restoring natural processes to provide ecosystem services as a means of increasing resiliency, as opposed to increasing grey infrastructure. This ties into moving back, green infrastructure, protecting natural features, and a more aggressive stance in restoring/enhancing those places.
 - 3. There needs to be a crosswalk with Federal Permitting to ensure success of implementing the Climate Change Resilience Strategy (e.g., USACE Back Bay Study recommendations, if funded, could cause adverse ecological harm.).



Municipal Essential Practices Recommendation Comments to the NJDEP Climate Change Resilience Strategy

- I. Leveraging resources, maximizing returns on investment in damage reduction and/or reduced climate vulnerability over the long-term and building climate adaptability into policies and practices are critical considerations for municipalities as they navigate their resilience options.

- II. The State is encouraged to identify a limited number of key municipal resilience practices and provide a framework that guides municipalities through those practices to implement effective resilience action and integrate meaningful resilience practices into local master plans. Even when local leaders want to take decisive resilience action, they are not necessarily able to do so with any certainty that their actions will align with existing local practices or with state or federal policies or incentives. A guidance document for successfully implementing the following essential practices will assist towns to put in place fundamental components that will help them to proactively develop a local climate resilience strategy.
 - a. Designate a resilience officer
 - i. **It is recommended that the State take actions to help municipalities establish a local resilience officer through the development of a model resilience officer position description and ordinance as well as providing the appropriate resources and guidance for effective implementation.**

 - b. Do a vulnerability assessment
 - i. **It is recommended that the State develop guidance for municipalities on how to conduct local vulnerability assessments that lead to the collection of a minimum number of standard metrics that can be integrated with the information used in the development of county multijurisdictional hazard mitigation plans, the state hazard mitigation plan, and that inform local municipal land use planning.**

 - c. Collaborate with other resource groups to get technical assistance
 - i. **It is recommended that the State compile and maintain updated guidance for municipalities at various stages of resilience planning or action to connect**

with each other or with other entities engaged in relevant research, information sharing or development of resilience solutions; and support a network of resilience professionals and entities who can provide technical assistance to meet municipal resilience planning and implementation needs. There are many non-profit entities that can provide resources to practitioners and communities for resilience that the State is encouraged to make available, including but not limited to the members the NJ Coastal Resilience Collaborative and the Rutgers University Climate Change Resource Center.

- d. Enhance floodplain management through the Community Rating System program
 - i. **It is recommended that the State identify which strategies available through CRS would be most conducive to more progressive floodplain management practice and also be feasible to implement; and provide municipalities with expanded, dedicated resources and both technical and political backing to make informed and forward-looking decisions about CRS activities.**
 - e. Integrate resilience and sea level rise scenarios into local planning
 - i. **It is recommended that the State develop targeted guidance for local jurisdictions to address local vulnerabilities to flooding from sea level rise, tidal events and storm events using multiple target dates such as 2050, 2070 and 2100 to address varied longevity and risk tolerance of assets.**
 - f. Develop a municipal resilience plan
 - i. **It is recommended that the State prepare a municipal resiliency plan template that provides recommendations for a range of actions a local jurisdiction may take to reduce or avoid local vulnerabilities in accordance with the requirements of the New Jersey MLUL; and Identify resources to develop and complete 10 local resilience plans for communities which have agreed to an Action Plan as part of their petition for Plan Endorsement by the State Planning Commission.**
- III. The approach to minimizing flood damage should focus on eliminating new development in flood prone areas and relocating existing development to be out of flood prone areas.



Essential Municipal Resilience Practices

I. Background and Rationale

New Jersey's coastal communities are increasingly faced with the reality that reducing the impacts of climate change requires strategic resources and actions. Many are struggling to identify appropriate and effective responses to increased flooding, sea level rise and associated hazards or implications. There are a number of approaches or actions towns can take to increase resilience. A set of foundational municipal practices would significantly increase the efficiency and effectiveness of implementing resilient actions. Leveraging resources, maximizing returns on investment in damage reduction and/or reduced climate vulnerability over the long-term and building climate adaptability into policies and practices are critical considerations for municipalities as they navigate their resilience options.

The Municipal Essential Practices Work Group of the Coastal Resilience Collaborative (CRC) aims to identify a limited number of key municipal resilience practices and provide a framework for municipalities to effectively implement resilience actions and integrate meaningful resilience practices into local master plans. Recognizing the limited capacity of towns and the state regulatory and programmatic framework that overlaps with local resilience efforts, this work also aims to inform the state's Coastal Resilience Plan so that it may enable and support municipal resilience practices recommended by this document and beyond. In doing so, it is not the intention of this work group to describe all the things towns and the State can do to be more resilient, or even the "best" things they can do, but rather provide a framework for organizing local actions and embedding resilience into municipal decisions. This framework represents a starting point that serves as the launching pad for additional local resilience actions.

To offer a format that can provide guidance and action steps to municipalities, the framework is organized as six essential tasks towns should do to maximize resilience efforts:

1. Designate a resilience officer with supporting resilience team
2. Conduct a vulnerability assessment
3. Collaborate with other resource groups to get technical assistance
4. Enhance floodplain management through the Community Rating System program
5. Integrate resilience and sea level rise scenarios into local planning, investment and regulatory tools
6. Develop a municipal resilience plan or strategy that identifies priority short, medium and longer term action steps

A resilience officer is a top-level advisor that reports directly to the municipality's mayor or administrator. The task of this position is to establish a compelling resilience vision for his or her city,

working with a resilience team across departments and with the local community to maximize innovation and minimize the impact of unforeseen events¹. Resilience officers will coordinate across internal and external stakeholders, lead the process to develop a resiliency plan, and act as a point person for the resilience team to ensure that investments and capital projects are designed with a “resilience lens”. Depending on the size, resources and community risk, the resilience officer and team could be an existing group of professional staff or volunteers.

A vulnerability assessment identifies the risks posed to the community by natural hazards in a changing climate and the elements of the community that are vulnerable to those risks. Once identified, steps can be taken by the municipality to mitigate their vulnerabilities through adaptation and climate resilience practices. Metrics and targets for identifying an acceptable level of risk through a vulnerability assessment are needed.

The Community Rating System (CRS), particularly in the wake of Sandy and federal National Flood Insurance Program reform, has become a linchpin of municipal efforts to reduce the financial burden of flood insurance and organize floodplain management efforts. With so many flood-vulnerable municipalities participating in CRS and floodplain development continuing relatively unabated, the program deserves critical examination of its efforts to foster resilience and adaptation in New Jersey beyond subsidizing the cost of inhabiting and owning property in vulnerable areas. For the program to be a more effective catalyst for reducing existing and future flood risk to people and property, State and local efforts are needed to enhance the program’s implementation in the State to support more adaptive practices. Municipalities should plan to achieve at least a Class 4 CRS rating and encourage substantial floodplain insurance penetration throughout their designated flood zones.

The development of a municipal resilience plan or strategy will help local jurisdictions use the authorities granted to them under the Municipal Land Use Law (MLUL) and Uniform Construction Code (UCC) to combat the adverse effects of climate change induced flooding.

II. The Need for Municipal Guidance

Based on a review and summary of reported recommendations for resilience in New Jersey and professional knowledge of CRC work group members, it became apparent that, even when local leaders want to take decisive resilience action, they are not necessarily able to do so with any certainty that their actions will align with existing local practices or with state or federal policies or incentives. A guidance document for successfully implementing the six identified essential practices will assist towns to put in place fundamental components to proactively develop a local climate resilience strategy. The CRC has done considerable work to organize around these issues and is well-positioned to partner with the State in development of municipal guidance to advance these fundamental practices.

Designate a resilience officer and team

It is important for communities to designate a point person with a cross program resilience team for resiliency matters to make sure that resilience issues are considered along with the typical local

¹ 100 Resilient Cities

government functions and not as a separate siloed activity. As the activities of multiple local departments impact the resilience of a community, examining resilience issues in isolation, or assigning it to a particular department, is unlikely to be as effective as assigning a high level official that has the authority to coordinate horizontally across multiple departments in a resilience team. As coastal resilience planning responsibility is transferred from the state and county levels to local municipalities, the need for a local resilience officer to address planning requirements will increase.

Do a vulnerability assessment

Resources and actions can only be targeted appropriately when risks and impacts are identified and investigated. Understanding the big picture, long-term scenarios that climate change can bring will arm local leaders with the information they need to support decisions to transition development away from high-risk areas and invest in adaptation solutions. The outcomes of the vulnerability assessment drive the recommendations of a resilience strategy. Natural hazard mitigation planning in New Jersey currently occurs at state, county and local jurisdictional scales, but it does not encompass a community-wide and systemic assessment of climate risk, nor does the process actively engage stakeholders of the wider community and highly affected neighborhoods. Although various information exists to assist municipalities to conduct a climate vulnerability assessment as a resilience measure, there is no standard or minimum expectation for what the assessment should entail, evaluate or lead to. There is also no requirement or major incentive for towns to conduct a vulnerability assessment at all. Detailing what a vulnerability assessment should entail, including a standard set of metrics, will ensure towns are conducting assessments that yield quality information and that vulnerability assessments can be compared against a measure.

Collaborate with other resource groups to get technical assistance

The advantages that result from regional resilience planning for more comprehensive or holistic solutions would also benefit individual local communities. Municipalities need resources that will enable them to collaborate with local and regional resilience efforts already underway. Guidance for municipalities should include a list of frequently updated agencies, organizations and professionals with experience or expertise that is applicable to different stages and types of resilience planning and action.

Enhance floodplain management through the Community Rating System program

FEMA's Community Rating System offers municipalities a menu of options to build flood resilience and receive credit for resilient practices that accrues as a financial benefit to policyholders. Despite high uptake in the program in New Jersey, the program has largely failed to modify floodplain development patterns in ways that reduce risk exposure beyond higher building standards. The program has effectively subsidized the cost of development in areas prone to existing and future flood hazard. In recognizing that CRS offers the most feasible incentive and program architecture to municipalities to facilitate flood resilience, there is a need to address the contradictions created by participation in the program. Municipalities and local beneficiaries of the National Flood Insurance Program (NFIP) premium discounts enabled through CRS are broadly unable or unwilling to advance more profound floodplain management practices that CRS itself recommends, such as buyouts and restrictions on development. Even without those activities, communities statewide have been able to achieve advanced levels of CRS

class that result in much higher discounts. This is a disincentive to undertake more aggressive measures. CRS communities typically have local flood damage prevention ordinances that exceed state standards for floodplain management. This indicates that the State can unilaterally lead more aggressive action in regulating land use, mandating the disclosure of flood hazard, and ensuring planning consistency. In order to build capacity and willingness to take on more adaptive actions, State and local cooperation (in addition to deliberate action from both) is needed to reduce moral hazard and build resilience.

Integrate resilience and sea level rise scenarios into local planning

This guidance is currently being addressed as a component of the municipal resilience plan guidance. See the below description.

Develop a municipal resilience plan

New Jersey coastal communities will experience the impacts of climate change at a disproportionate rate and magnitude compared to inland communities at higher elevations. New Jersey coastal areas are likely (at least a 66% chance) to experience a Sea Level Rise (SLR) of 0.5 to 1.1 ft between 2000 and 2030, and 0.9 to 2.1 ft between 2000 and 2050,² significantly increasing the risk of flooding in coastal communities from tidal and storm events. State level SLR guidance should set standards and targets for community resilience strategies and plans. To appropriately plan for and address future climate change impacts, local communities need to develop short, mid-, and long-term resilience plans that address areas vulnerable to permanent, nuisance and storm event flooding based on:

1. NJDEP recommended SLR projections,
2. the risk of assets and populations vulnerable to climate hazards,
3. the locations and assets that warrant priority resilience/hazard mitigation actions due to their vulnerability, and
4. the potential severity of community-wide impacts should the assets be impacted by flooding.

III. Recommended Strategy

The ultimate goal of this effort is to provide actionable guidance to municipalities so that they can effectively implement a resilience framework based on the six resilience practices outlined in this document. Recognizing the limited capacity of towns and the state regulatory and programmatic framework that overlaps with local resilience efforts, this work also aims to inform the state's Coastal Resilience Plan so that it may enable and support municipal resilience practices recommended by this document and beyond.

The strategy envisions a municipal resilience framework that assigns responsibility and focus to a central resilience agent and team, who would be charged with overseeing a climate vulnerability assessment for the community and development of a local resilience strategy to address climate vulnerabilities, drawing

² Kopp et al., 2019

on guidance for effective local floodplain management actions and how to seek assistance and collaboration in resilience planning and implementation.

Designate a resilience officer and team

A review of existing resilience officer positions has revealed a lack of resources focused directly on the role of a local or climate resilience officer, however there are numerous resources that can be applied to assist a resilience officer in carrying out specific aspects of his/her job to include developing a vulnerability assessment, a resiliency plan, etc. **It is recommended that the State take actions to help municipalities establish a local resilience officer and team through the development of a model resilience officer position description and ordinance as well as providing the appropriate resources and guidance for effective implementation.** Consideration should be given to the capacity of local communities to establish a local resilience officer and alternative or complementary programs considered, including county support and outsourcing or resiliency officer activities to consulting firms. By following these recommendations, guidance will be developed describing why and how towns should designate a local resilience officer. Providing minimum responsibilities for a local resilience officer will direct communities as to what tasks are required and how to effectively implement local resiliency planning and projects. A local resilience officer will be a coordinating entity between state, county, and municipal activities, keeping towns up to date on resources, programs, and data. By transferring a portion of resilience responsibility to the local community a mechanism will be created to align state and county programs and provide incentives for communities to participate in the planning process. The State should ensure there are mechanisms for ongoing support and training.

- **Action Needed:** Designate an entity to provide a comprehensive review of existing resilience officer positions and their roles and responsibilities in resilience planning and implementation.
- **Output:** A set of recommendations for the creation of a standard resilience officer description and a model ordinance for municipalities to use in establishing a local resilience officer.
- **Partner Support Action:** The CRC should reach out to existing resilience officers, for example in Hoboken and Long Beach Township, for input on how to establish local resilience officers, the costs associated with creating a resilience officer position, and what support organizations are available to them to help conduct their work. The CRC should articulate to municipalities the benefits in establishing a local resilience officer and promote the creation of a network to support resilience officers. The CRC should strongly encourage and incentivize local governments to hire a local climate resilience officer or to designate a current manager to adopt the role; articulate the benefits of such a position; and provide guidance as to what such a person would do, what their role would be, and what tools would help them to successfully implement these activities.

Do a vulnerability assessment

Presently there exists a number of community vulnerability assessment tools, informational guides, and data sources available from federal, state, academic and not-for-profit entities. A number of the tools, datasets, and guidance documents are New Jersey centric while others are regional and national in scope. Additionally, there exists a number of federal and state agencies with a mandate to assess natural hazard risks and vulnerabilities in New Jersey. To address the present lack of standards and incentives, **it is recommended that the State develop guidance for municipalities on how to conduct local vulnerability assessments that lead to the collection of a minimum number of standard metrics that can be integrated with the information used in the development of county multijurisdictional hazard mitigation plans, the state hazard mitigation plan, and that inform local municipal land use planning. NJDEP should, for the State of New Jersey, identify minimum targets that identify an acceptable level of risk that the vulnerability assessment should be based upon.** Once developed, all metrics that can be populated with state data should be created as a digital statewide database and a standard set of local data requirements be developed into interactive digital templates with guidance for use by municipalities. Standard metrics should include the ability to provide an assessment of evolving climate change risk over time, especially as it relates to infrastructure, food security, public health, vulnerable populations, ecosystem health and transportation networks. The developed vulnerability assessment methodology should be designed to enhance public engagement in all phases and aspects of the process to ensure the best available information is being used and there is community consensus on the appropriate assessment data, especially in the determination of mid- to long-range assessment horizons. By following these recommendations, a consistent set of information will be collected across all municipalities and be of a quality appropriate for the development of local climate change resilience plans. Standardizing the vulnerability assessment process will create an incentive, and potentially funding, for municipalities to engage in the county hazard mitigation planning process. Standardization will additionally allow for the development of guidance on the best available tools and information to use in a vulnerability assessment. Finally, the standardized guidance will allow for local vulnerability assessments to translate into local resilience strategies and planning. This guidance should be available on Rutgers Climate Tools as well as the NJDEP website.

- **Action Needed:** Designate an entity to guide an evaluation of all the existing tools, datasets, and information available for vulnerability assessments in New Jersey. The evaluation should identify existing resources and data gaps required for the development of a standard set of metrics.
- **Output:** A standard set of statewide vulnerability metrics for use in municipal vulnerability assessments and a standard template for the collection of local vulnerability data.
- **Partner Support Action:** The CRC should identify existing or potential mechanisms that trigger or support a municipal vulnerability assessment, such as through the MLUL or Hazard Mitigation plans, and research appropriate development typologies for vulnerability scenarios.

Collaborate with other resource groups to get technical assistance

There is currently no central database or access to a network of resilience projects or professionals in New Jersey. Municipalities seeking to begin or enhance resilience planning or in need of technical assistance do not know where to access those resources. **It is recommended that the State compile and**

maintain updated guidance for municipalities at various stages of resilience planning or action to connect with each other or with other entities engaged in relevant research, information sharing or development of resilience solutions; and support a network of resilience professionals and entities who can provide technical assistance to meet municipal resilience planning and implementation needs. Because different municipalities will need to respond to different conditions and with differing capacity, the database to access a network of resilience collaborators and professionals should be organized by factors such as type of resilience planning or action and type of service or area of expertise. This resource and support would foster regional collaboration and distribute technical resources where they are needed for local resilience action.

- **Action Needed:** Designate an entity to develop a platform to organize and host information for municipal opportunities to engage in resilience collaboration and obtain technical assistance; and identify a mechanism to maintain the information and support distribution of guidance to municipalities.
- **Output:** A searchable database and associated guidance to advance regional resilience collaboration and application and expansion of technical expertise in resilience planning and implementation.
- **Partner Support Action:** The CRC should identify existing or potential resources and networks that can be engaged by communities in need of resilience planning and technical assistance. The CRC should create a database of resources to be made available to municipalities.

Enhance floodplain management through the Community Rating System program

CRS's opportunity as a gateway to adaptation and its shortcomings that enable unsustainable development practices to take place need to be reconciled. The State should understand the pathways to resilience and adaptation that are already available through CRS, and recognize that communities' familiarity with CRS is a relationship that can be leveraged so that CRS benefits and State adaptation goals are not mutually exclusive. **It is recommended that the State identify which strategies available through CRS would be most conducive to more progressive floodplain management practice and also be feasible to implement; and provide municipalities with expanded, dedicated resources and both technical and political backing to make informed and forward-seeking decisions about CRS activities.** An assessment on how towns should maximize the CRS program for resilience should begin with compiling verification reports for participating communities and comparing the results of those reports against the activities listed in the CRS Coordinator's Manual. This analysis will yield which activities are being undertaken (and to what extent) and which ones are not. Activities that are not being undertaken will be examined for their feasibility. A stakeholder group of federal, state, and local floodplain management officials/CRS Coordinators (including CRS User Groups) should be convened to determine pathways to advance CRS activities with little or no existing uptake. The state should continue to coordinate with the regional CRS efforts already in place. In recognition that communities face widely variable exposure to flood risk and similarly variable political ability to regulate land use in ways that remove people and property from flood risk, the menu of creditable CRS activities should be critically examined by both state and local stakeholders to develop pathways for more impactful floodplain management. Utilizing the CRS program allows an established, familiar, and popular program to be used to advance more profound and effective floodplain management practice that removes people and

property from harm's way, rather than maintain development in vulnerable areas. Municipal actions will take more proactive measures using CRS while enabling the financial benefits to accrue to policyholders occupying less-risky areas. Additionally, the State should use its legislative, rule-making, and financial abilities to enhance floodplain development standards and discourage investment in vulnerable areas.

- **Action Needed:** Designate an entity to assess CRS capacity for advancing resilience and adaptation for coastal communities in New Jersey and a simultaneous review of state regulations, particularly the Coastal Area Facility Review Act (CAFRA) and Flood Hazard Area Control Act (FHACA), with floodplain management stakeholders.
- **Output:** Identification of opportunities for statutory and regulatory changes that promote more adaptive floodplain management practices.
- **Partner Support Action:** The CRC should outline how towns can accumulate meaningful CRS points as they follow the framework of the municipal essential resilience practices guidance and other closely aligned programs, such as Sustainable Jersey.

Develop a municipal resilience plan

There presently exists a number of planning tools, data and information that can be used by municipalities in the development of local climate change resilience plans. To aid municipalities in the development of local resilience strategies based on the best available climate change information, **it is recommended that the State: (1) Develop targeted guidance for local jurisdictions to address local vulnerabilities to flooding from sea level rise, tidal events and storm events using multiple target dates such as 2050, 2070 and 2100 to address varied longevity and risk tolerance of assets; (2) Prepare a municipal resiliency plan template that provides recommendations for a range of actions a local jurisdiction may take to reduce or avoid local vulnerabilities in accordance with the requirements of the New Jersey MLUL; and (3) Identify resources to develop and complete 10 local resilience plans for communities which have agreed to an Action Plan as part of their petition for Plan Endorsement by the State Planning Commission.** The template should be based upon the practical experience on this issue that was gained by relevant previous work; including but not limited to Getting to Resilience, local Hazard Mitigation plans, Coastal Vulnerability Assessment, County Hazard Mitigation planning and Community Rating System actions. A local vulnerability assessment that considers the likely range of SLR projections that pose flooding threats to the community based upon Rutgers STAP report³ and the current FEMA projections of the 1% and 0.2% storm limits of flooding in fluvial systems should underlie the plan. The resulting template should result in the identification of actionable items that a local jurisdiction may implement through existing plans and authorities, such as municipal land use planning, development ordinances, and Hazard Mitigation plans and projects, to the extent possible.

Recently, Governor Murphy signed EO 89 establishing a Chief Resilience Officer and an Interagency Council on Climate Change charged with development of a Statewide Resilience Strategy and Coastal Resilience Plan. EO 89 directs the State Planning Committee to address resilience through the Plan Endorsement process with local governments. Providing this platform for state leadership provides an

³ Kopp et al., 2019

opportunity for the state to develop guidance and resources for adaptation for municipalities that will lead to local resilience plans that are consistent with state and county resilience planning while addressing local resilience issues. Standardizing the planning process across municipalities will create an incentive, and potentially funding, for municipalities to engage in the local resilience planning process.

- **Action Needed:** Designate a working group of local resilience leaders, scientists and planning experts to oversee the development of a local resilience strategy template and guidance.
- **Output:** Standards and direction that will enable municipalities to develop robust local resilience strategies and plans.
- **Partner Support Action:** The CRC should develop guidance for municipalities on the development and implementation of local resilience strategies and plans as well as identify public outreach and engagement actions to build a broader public understanding of the need for this work. This would entail an effort to integrate community and regional efforts already underway to help inform and initiate other local efforts.