

The following Action Plan provides detailed strategies and specific actions, serving as a technical guide for implementing the recommendations of The Plan. These action plans are intended to be living documents, being revised and updated as Together North Jersey works with various partners on implementing recommendations in The Plan.



Focus Area 10: Enhance the resiliency of the region's communities and infrastructure.

What and why. The effects of climate change in New Jersey are well documented. Temperatures and sea levels are rising and precipitation increasing. These changes are expected to continue throughout this century, and will have serious consequences for North Jersey communities, infrastructure and natural ecosystems. The impacts of recent extreme weather events like Hurricanes Sandy and Tropical Storm Irene were devastating in our region. While it is difficult to say that individual weather events are caused by climate change, scientists expect extreme weather events to become more frequent and perhaps more severe as the effects of climate change continue in the years and decades to come. Local and state officials must take steps to ensure that the North Jersey region is prepared for, can withstand, and recover quickly from adverse events.

Even as measures to reduce global warming are developed, we must adapt our communities to the inevitably changing climate. New Jersey sustained roughly \$30 billion in economic losses from Hurricane Sandy, due in part to inadequate flood protection, land use policies that resulted in development of flood-prone areas, and a lack of understanding about the risks associated with severe storms. Much of this loss was sustained in our region, where extensive damage and repairs disrupted lives, businesses, ports, tourism and the fiscal health of many communities. Resiliency strategies must be incorporated into the land use, hazard mitigation and capital planning process at all levels of government so that future community development and infrastructure investments address the risks associated with extreme weather and a changing climate.

How. This focus area seeks to improve the resilience of both communities and infrastructure in our region. This can be achieved by: identifying better the region's vulnerabilities; implementing measures to adapt our communities and infrastructure to a changing environment; expanding floodplain buyout programs; and using green infrastructure to mitigate the effects of extreme weather and climate change.



Strategy 10.1: Identify the region's vulnerabilities to extreme weather and climate change

What and why. Identifying solutions that can reduce the impact of flooding, storm surge, sea-level rise and other climate and weather risks must start by developing a deep, broad understanding of what the region's vulnerabilities are. Each community has unique needs, depending on its particular infrastructure, topography and location. Our region must implement a comprehensive assessment process that can help identify potential impacts—on communities, infrastructure and our economy—and assess our region's level of preparedness in dealing with those impacts. We should also establish a regional climate change working group to coordinate the assessment process, provide technical assistance and guide implementation. Understanding our vulnerabilities will allow the region to develop

the policies and investment strategies necessary to protect residents, property, businesses, infrastructure and natural systems.

	<u>Actions:</u>	<u>Suggested Responsibility:</u>	<u>Timeframe:</u>
1.	Conduct Vulnerability and Risk Assessments of regional transit and transportation facilities, broadband communication systems, electric power systems, wastewater and water supply systems, liquid fuel supply chains and critical life support systems (including hospitals, 911 Call Centers, etc.) to determine their vulnerability to extreme weather and climate change, and develop plans, programs and regulations aimed at minimizing vulnerabilities.	NJDOT, NJ TRANSIT, NJTPA, NJBPU, NJ Water Supply Authority, NJDEP, Counties and municipalities.	Short term
2.	Conduct vulnerability and risk assessments of all communities and county for vulnerability to extreme weather.	Counties, municipalities	Short term
3.	Identify “communities of concern” (socially vulnerable populations) as part of the vulnerability and risk assessment that are vulnerable to the impacts of extreme weather and climate change and ensure their representation in hazard mitigation and resiliency planning; Identify strategies for addressing the unique needs of these populations.	Counties, municipalities	Short term
4.	Develop a vulnerability assessment template for both coastal and riverine communities that may be vulnerable to extreme weather conditions and climate change and promote the assessment template and inventory of preparedness and resiliency policies.	NJDEP CLUP (Resilient Coastal Communities Initiative), Rutgers (JCNER)	Short to medium term
5.	Establish a Climate Change Working Group to coordinate scientific assessments of potential climate change impacts, including sea level rise projections and guidance for how to respond to them. Activities include the formation of a Science and Technical Advisory Panel to develop a climate impact assessment and region-wide recommendations for improving preparedness and resilience to climate change.	NJ Climate Adaptation Alliance (NJCAA)	Short to medium term
6.	Develop and disseminate local recommendations for improving preparedness and resilience to climate change.	NJ Resiliency Network (Sustainable Jersey)	Short to medium term
7.	Conduct vulnerability and risk assessments in all communities for vulnerability to extreme weather and climate change. Assessments should analyze the potential risks to community assets in all sectors – physical, environmental, economic, social and civic.	Municipalities, NJ Resiliency Network (Sustainable Jersey)	Medium term

8.	Promote the importance of conducting local (county and municipal) vulnerability and risk assessments and incorporating them into hazard mitigation plans and master plans.	NJDEP, NJ OEM, NJ Resiliency Network (Sustainable Jersey), NJ-APA, NJAC	Medium term
9.	Promote municipal participation in the FEMA Community Rating Systems (CRS) program in order to enhance local flood preparedness and mitigate the impacts of extreme weather on vulnerable communities.	Municipalities, CRS User Groups and Sustainable Jersey	Medium term
10.	Identify and prioritize brownfields and sites with industrial hazardous materials that are vulnerable to the impacts of existing and future flooding and may produce off-site pollution and contamination as well as negative impacts for disadvantaged communities.	NJDEP	Medium term
11.	Conduct a comprehensive evaluation of policies and regulations governing New Jersey's coastal zone (e.g. CAFRA) in light of identified risks to a changing climate, and update the state’s coastal zone management plan.	NJDEP	Medium to long term



Strategy 10.2: Adapt communities and infrastructure to be resilient to extreme weather events and the impacts of climate change

What and why. Adapting communities and infrastructure to be more resilient to extreme weather events and the impacts of climate change will minimize future costs in damage, suffering and loss. Our region’s communities—our homes, commercial properties, public services and infrastructure (energy, drinking water, wastewater, transportation, and telecommunications systems) must be upgraded and adapted to standards that allow them to not just withstand, but to perform optimally under future weather and climate conditions. Adaptation strategies should include elevation or relocation of buildings and/or infrastructure, wet flood proofing (letting water pass through to minimize structural damage or using water resistant materials), dry flood proofing (making the structure impermeable) and other types of retrofitting.

	<u>Actions:</u>	<u>Suggested Responsibility:</u>	<u>Timeframe:</u>
1.	Provide technical assistance and funding to the 19 northern New Jersey region municipalities in their efforts to reduce Combined Sewer Overflows and urban flooding (CSOs). (See Strategy 14.3)	NJDEP	Short to medium term
2.	Incorporate climate change policy and adaptation strategies into capital planning and decision-making of state agencies.	State Office of Planning Advocacy	Medium term

3.	Develop a systematic and sustained training curriculum to teach transportation facility managers and infrastructure engineers and operators the basics of risk analysis and climate science.	Rutgers- CAIT, New Jersey Climate Adaptation Alliance	Medium term
4.	Enhance and implement emergency response communication protocols to ensure timely community communication about potential hazardous risks during extreme weather events.	State and County Offices of Emergency Management, Support: municipality	Medium term
5.	Revise the Municipal Land Use Law to require integration of natural hazard mitigation and climate change resiliency planning into comprehensive master plans.	State Legislature Support: APA-NJ	Medium term
6.	Develop and adopt resilient design and construction guidelines and standards for future climate impacts to infrastructure (e.g. sea level rise projections for 2050 and 2100) along with commensurate amendments to regulations, codes, and standards to meet the new guidelines.	New Jersey Board of Public Utilities, NJDOT, Utility operators	Medium to long term
7.	Amend land use regulations to discourage new development in highly vulnerable areas while also identifying measures to fortify areas where discouragement of development is not possible.	Municipalities	Medium to long term
8.	Identify critical infrastructure projects from long-term resiliency plans (e.g. NJ State Mitigation Plan) and vulnerability assessments and make targeted investments for resiliency and relocation, of energy, transportation, water, and communication systems.	NJDEP, NJDOT, NJTPA, NJ TRANSIT, utilities operators	Medium to long term
9.	Achieve more resilient drinking water and wastewater treatment systems through innovative technologies.	Local water utilities, NJBPU	Long term
10.	Strengthen and modernize existing infrastructure to be more resilient, while meeting the forecasted growth in demand.	NJDEP, NJDOT, NJTPA, NJ TRANSIT, utilities operators	Long term
11.	Direct future infrastructure investment to encourage development towards areas that are more resilient and less vulnerable to the impacts of climate change while making investments to protect vulnerable urban communities.	State Office of Planning Advocacy, with NJDEP, NJDOT, NJTPA, NJ TRANSIT, utility operators	Long term

Strategy 10.3: Encourage floodplain buyout programs and return flood-prone areas to their natural function

What and why. The process by which a government or non-profit buys property in a flood prone area, relocates or demolishes any building improvements on the site and returns the property to its natural state is call a floodplain buyout. These programs are important tools because they compensate landowners for their property, take residents out of harm’s way and re-establish natural systems —such as wetlands—that can provide a buffer from future flooding. Our region should expand floodplain buyout programs to remove development in flood-prone areas to reduce both the risk to individuals and the shared recovery costs. In order to do this effectively, our region needs stable funding for the existing state, county and local Blue Acres buyout programs. We should also introduce new and innovative approaches that incorporate buyouts into municipal and county comprehensive, open space and hazard mitigation plans.

	<u>Actions:</u>	<u>Suggested Responsibility:</u>	<u>Timeframe:</u>
1.	Incorporate maps and data from recent repetitive flooding, as well as areas potentially vulnerable to future flooding into the local master plan and/or master plan reexamination and hazard mitigation plan.	Municipalities	Short term
2.	Identify and prioritize areas where repetitive flooding occurs, or is likely to occur due to rising sea levels, storm surges, and extreme precipitation. This analysis should draw from vulnerability and risk assessments conducted across the region (see Strategy 10.1)	NJDEP, with NJ Future	Medium term
3.	Develop a suite of buyout options that will relocate development out of flood prone areas, including TDR and innovative ways to leverage buyout funding to extend the “purchasing power” of the State Blue Acres Program.	APA-NJ	Medium term
4.	Develop and promote a voluntary buyout program as part of the county (or municipal) all hazards mitigation plan.	Municipalities, Counties	Medium term
5.	Establish a stable base of funding for the State Blue Acres program.	State legislature	Medium to long term

Strategy 10.4: Use green infrastructure solutions to mitigate the impacts of extreme weather and climate change

What and why. According to the U.S. Environmental Protection Agency, green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site,

green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water. Green infrastructure can provide protection from flooding and storm surges, defend against sea level rise, and lower the number of incidents of combined storm and sewer overflows, particularly in urban areas where much of the surface is paved and impervious to water. Our region needs to eliminate policies and regulations that prevent the use of green infrastructure, implement education programs to improve understanding of green infrastructure's value and widen the range of incentives available for property owners and local governments to adopt green infrastructure strategies.

	<u>Actions:</u>	<u>Suggested Responsibility:</u>	<u>Timeframe:</u>
1.	Dedicate a municipal budget line for maintenance of tree canopy, i.e. planting, watering, pruning, horticulture training.	Municipalities	Short term
2.	Implement a rain barrel rebate program for installation of rain barrels at residents' homes and provide educational material about the benefits.	County and Rutgers Cooperative Extension , Municipalities	Short term
3.	Develop and implement stormwater management regulations and practices for above-ground facilities to detain water (rainwater harvesting, rain barrels cisterns, and green/blue roofs), subsurface facilities for storage, (e.g. cisterns) and rainwater harvesting for water re-use (irrigation for landscaping and indoor water consumption).	Municipalities, Counties, NJ Chapter of the American Society of Landscape Architects	Short to medium term
4.	Incentivize the use of green infrastructure measures in new development through land use regulations.	Municipalities, Counties	Short to medium term
5.	Adopt and implement green maintenance and purchasing programs that promote sustainable building and grounds operations.	Municipalities, Counties	Short to medium term
6.	Analyze NJ's regulatory structure and policies for public investment and remove barriers to, and provide incentives for, the use of green infrastructure, innovative design, and compatible uses that cost-effectively promote climate adaptation while delivering additional ecosystem service or other benefits.	NJDEP CLUP (Resilient Coastal Communities Initiative)	Medium term
7.	Incentivize adoption of local (county and municipal) green infrastructure strategic plans that identify and prioritize cost-effective and appropriate sites for green infrastructure measures.	NJDEP, Sustainable Jersey	Medium term
8.	Develop municipal and county guidelines for the use of green (vegetated), blue (water managing), or white (cooling) rooftops on both public and private buildings in order to reduce heat island effects, save on energy costs, and retain rainwater. This action includes development of stormwater management model ordinances that emphasize infiltration of stormwater using rain gardens, bioswales, stormwater trees, infiltration planters and permeable pavements.	NJ – ASLA, Natural Resources Defense Council	Medium term

9.	Integrate green infrastructure measures into municipal and county stormwater management plans.	Municipalities, Counties	Medium term
10.	Promote green infrastructure education and strategies in schools.	Sustainable Jersey for Schools, Vocational Schools	Medium to long term
11.	Promote municipal adoption of Urban Forestry Plans that maintain an increased tree canopy, particularly near pavement in order to reduce heat island effect and provide shading.	NJ Community Forestry Program at NJDEP, Municipalities	Long term

