

Climate Change Preparedness in New Jersey: Best Practices for Local Planners



Prepared by the New Jersey Climate
Adaptation Alliance



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Making Great Communities Happen

Climate change impacts present a range of challenges to New Jersey. More intense precipitation events will lead to more flooding, more stormwater runoff, and degraded water quality due to erosion and contaminants from overland flows. Sea level rise and flooding events increase the risk of damage to homes and businesses, critical utility and transportation infrastructure, and natural habitat such as wetlands and dunes. Warming temperatures will result in more high-heat days, a decline in air quality due to increases in particulate matter and ozone, and a change in the range and distribution of plant and animal species, while more frequent droughts will result in a less reliable water supply. These impacts will exacerbate existing challenges in New Jersey's towns and cities such as aging infrastructure, habitat fragmentation, limited tax revenues, and socioeconomically vulnerable urban communities.

Much of the current planning work in New Jersey that strives to create more sustainable communities provides direct climate change resiliency benefits. Incorporating consideration of future climate projections, including changes in flooding, temperature and precipitation, will strengthen ongoing efforts of planners to prepare for a changing climate. Information on climate change impacts, as well as trends and projections for New Jersey, can be found via the New Jersey Climate Adaptation Alliance at: <http://njadapt.rutgers.edu/>.

What can planners do to prepare for and adapt to climate change in New Jersey?

- 1. Conduct a vulnerability and risk assessment of climate impacts on your community.** Every community is different; it is critical to understand what the biggest risks and needs are in your area. For coastal communities, sea level rise is likely to be the impact of greatest concern, while for inland communities, heavy precipitation events and stormwater runoff may be the biggest challenges. For urban communities, high-heat days and contaminants from flooding may be major concerns. Use existing resources such as Getting to Resilience/FloodMapper and the FEMA Community Rating System to assess risk. Determine both who is at risk (age, location, and mobility of the local population) and what areas are at risk. Identify critical infrastructure, key natural resources, and evaluate environmental, public health, and economic impacts.
- 2. Develop a coalition of local leaders that can play a role in local climate change preparedness.** Elected officials, municipal engineers, public health officers, the department of public works, police and firefighters, emergency managers, business leaders, and watershed managers are examples of key allies that should all be on the same page regarding what climate preparedness entails. Bring everyone into the same room to describe climate changes that have already been observed, what changes are expected, and how that will impact the community. Work with the community partners to ensure that climate change projections are included as considerations in emergency preparedness plans, public works budgets, local heating and cooling center capacities, and other key decisions. Develop communications plans, emergency

evacuation routes, and back-up plans to ensure adequate food and energy supplies in the event of extreme weather events.

- 3. Incorporate climate change projections into municipal master plans, hazard mitigation plans, and capital improvement and maintenance plans.** Ensure that sea level rise, temperature, and precipitation projections are included in planning documents. Consider the implications of climate change when developing goals and objectives in master plans (e.g. set goals to minimize future water demand or to prevent future development in floodplains). When developing or revising the Community Facilities Plan Element, evaluate the proposed location of new roads, bridges, schools, or municipal facilities in light of future flooding, temperature, and air quality patterns. Encourage the installation of larger stormwater collection systems that can accommodate higher volumes of runoff. If freshwater intakes, sewage treatment plants, pump stations, and other infrastructure need to be replaced, ensure that sea level rise is considered in determining their location. Employ technologies such as high-temperature resistant paving for new roads, and ensure that maintenance plans for road and rail networks account for increased maintenance resulting from rising temperatures and more precipitation.
- 4. Revise land use ordinances to respond to climate change impacts.** Work with governing bodies and planning boards to assess land use, zoning, site plan and subdivision regulations, and other relevant ordinances. Revise municipal regulations to encourage development in areas away from hazards such as flooding and erosion and to promote open space preservation and clustered development. Encourage developers and municipalities to exceed existing stormwater regulations by incorporating consideration of future climate scenarios in their designs, and promote natural recharge and reductions in volume of stormwater runoff. Provide technical assistance and educate stakeholders about the connection between low impact development techniques and the enhanced resilience of communities in the face of increased flooding, more intense precipitation, droughts, and water quality degradation. Revise building codes and design guidelines to permit green roofs, solar panels, wind turbines (where appropriate), passive solar design, and energy-efficient technology and encourage installation of these technologies such that they function independently of the electrical grid; reducing reliance on the grid enhances resiliency in case of power outages, particularly during high-heat events and storm events. Ensure that zoning ordinances require basic design elements such as building orientation and landscape design to work in concert with the natural environment; applicants seeking variances and design waivers should demonstrate that they have maximized storm water capture, minimized heating and cooling costs, etc. to the extent practicable.
- 5. Reduce impervious cover.** Excessive impervious coverage exacerbates flooding and impacts on water quality as result of increased stormwater drainage to local waterways. The primary cause of flooding and water quality issues is linked to excessive impervious surfaces that drain directly to local waterways.
 - *Identify impervious surfaces:* Map impervious coverage, including roads, buildings, and parking lots.
 - *Eliminate, reduce or convert impervious surfaces that are not necessary.* Consider revising parking requirements, minimum road widths, and other regulations governing permissible impermeable coverage. Examine current utilization of surface parking areas and consider alternate land uses and shared parking solutions. Promote permeable paving, green roofs, and other options to replace impervious cover.
 - *Disconnect impervious surfaces from flowing directly to local waterways.* Green infrastructure such as rain gardens, tree trenches, and pervious pavement can be used to disconnect impervious surfaces.

- 6. Encourage more green space and planting of street trees.** Tree cover helps reduce heat in urbanized areas on high heat days. Vegetation acts as a carbon sink and absorbs air pollutants, which helps to improve air quality. Green spaces also absorb water during heavy precipitation events. Develop goals and plans to increase tree cover, especially in urban areas. Ensure that land use regulations require new development to include vegetation. Encourage planting of a diversity of plant species, with an emphasis on native species, but be aware of the fact that 'native' species ranges will change as temperatures warm.
- 7. Preserve and restore wetlands, marshes, connected open space, and agricultural land.** Wetlands and marshes are effective barriers against flashfloods and sea level rise. These systems filter pollutants, slow flood flow, help to prevent erosion, and support biodiversity. Preserving and restoring wetlands and marshes next to streams and lakes are vital for strengthening watershed resilience. Comprehensive land preservation and restoration programs that are designed to protect and enhance critical watershed lands (including wetlands and marshes) are also critically important to enhancing the resilience of watershed systems. Zone to protect prime agricultural soils and critical habitats. Contiguity of preserved land is critical in order to allow for the migration of species as they adapt to a changing climate. Pursue opportunities for conservation easements and land acquisition through land conservancies and government-funded acquisition programs.
- 8. Discourage development in flood-prone areas.** Use up-to-date flood mapping in conjunction with climate change projections to develop maps of areas with high flood risk, including coastal areas at risk from sea level rise, and riparian and low-lying inland areas likely to flood during heavy precipitation events. Consider imposing stricter regulations, e.g. extend restrictions that apply in 100-year floodplains to 500-year floodplains, and restrict new development in 100-year floodplains by zoning for very low density uses or transferring development rights. Where development in flood-prone areas is permitted, establish minimum requirements for building construction (e.g. elevations, flood-proof materials, construction techniques). Limit a property owner's ability to rebuild structures subject to repetitive flood losses. Require large setbacks from shorelines and water bodies, and require owners to maintain riparian vegetation along waterways.
- 9. Advocate the reuse of remediated brownfield sites.** In addition to serving other planning goals such as promoting compact infill development and utilizing existing infrastructure networks, reuse of brownfield sites is climate-adaptive because it preserves undeveloped land and because mitigation of contaminated sites reduces the risk of water-borne contamination during flood events. Create incentives and policies that promote brownfield redevelopment such as density bonuses, tax incentives, and designation of redevelopment areas.
- 10. Educate the public on climate change impacts, what it means for their community, and personal preparedness practices.** Conduct outreach to teach the general public and governing bodies about local impacts of climate change. Educate residents about the public health and economic impacts of climate change and ensure that people are aware of community resources and emergency management protocols. Hold community workshops, prepare checklists of best practices for residents, and partner with local school systems. Target outreach to vulnerable populations, especially the poor, elderly, and physically and mentally disabled.

Resources

Climate Change Trends and Projections

State of the Climate: New Jersey 2013 Report

Prepared by the Rutgers Climate Institute

<http://climatechange.rutgers.edu/resources/state-of-the-climate-new-jersey-2013>.

Getting to Resilience

Jacques Cousteau National Estuarine Research Reserve & Barnegat Bay Partnership

An online self-assessment process to assist communities evaluate risk from sea-level rise and flooding. Includes FloodMapper, which allows communities to map and visualize their flood risk.

<http://www.prepareyourcommunitynj.org/>

Ecosystem-Based Management Tools Network

A compilation of mapping and data visualization tools that can be used to assess vulnerability.

<http://www.ebmtoolsdatabase.org/resource/climate-change-vulnerability-assessment-and-adaptation-tools>;

Adaptation Toolkit: Sea-Level Rise and Coastal Land Use

Georgetown Climate Center

A compilation of land use tools and strategies to mitigate risks to coastal development and infrastructure.

<http://www.georgetownclimate.org/resources/adaptation-tool-kit-sea-level-rise-and-coastal-land-use>

Adapting to Urban Heat: A Tool Kit for Local Governments

Georgetown Climate Center

Strategies for mitigating against heat island effect, including resources on cool pavements and roofs, urban forestry, and green roofs.

<http://www.georgetownclimate.org/adaptation-tool-kit-urban-heat>

Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments

University of Washington

A report focusing on how to build community support for climate change preparedness.

<http://www.cses.washington.edu/db/pdf/snoveretalgb574.pdf>

Water Resources Fact Sheets

Information about stormwater management, rain gardens, rain barrels, and other resources related to sustainable water management strategies.

http://www.water.rutgers.edu/Fact_Sheets/Default.htm

Directory of Local Health Departments in New Jersey

New Jersey Department of Health

Contact your local health department to learn about your local heating and cooling center capacity.

<http://www.state.nj.us/health/lh/directory/lhdselectcounty.shtml>

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