ADAPTING TO CLIMATE CHANGE
NORTHEAST

EPA United States Environmental Protection Agency

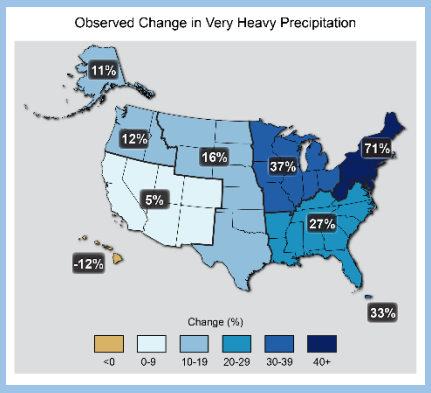
The Northeast is projected to experience increased precipitation, more frequent and intense storms, and higher average temperatures. These projected changes pose challenges to communities as they protect water and waste infrastructure, maintain water quality, and protect air quality and public health. Many communities are building resilience to the risks they face under current climatic conditions. This fact sheet provides examples of communities that are going beyond resilience to anticipate and prepare for future impacts.

Moving Beyond Resilience to Adaptation

Climate change adaptation goes beyond resilience by taking actions to address future risks. Adaptation refers to how communities anticipate, plan, and prepare for a changing climate.

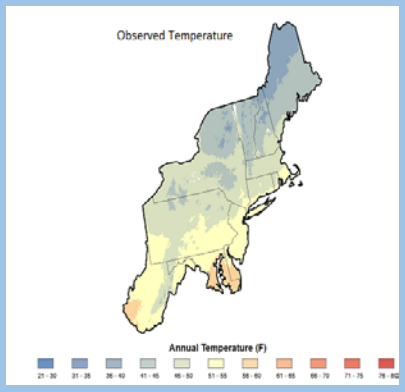
Observed and Projected Changes in the Northeast

Intense storms have increased



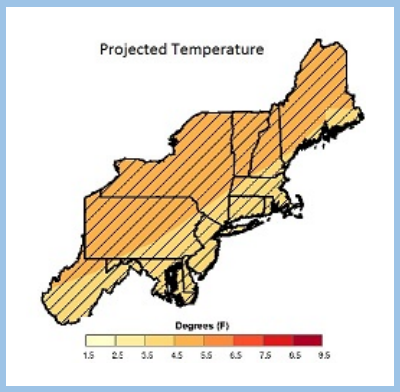
The Northeast experienced a 71% increase in the amount of precipitation falling in very heavy events (the heaviest 1%) from 1958 to 2012.

Average Annual Temperature



This map shows the average annual temperature (°F) from 1981 to 2010 in the Northeast.

Average Annual Temperature Increases



The Northeast is projected to experience an increase in the average annual temperature (°F) for 2041 to 2070 compared to 1971 to 1999 under a high emissions scenario.

Protecting Critical Community Infrastructure

Flooding from more frequent and intense storms and sea level rise will continue to threaten critical drinking water and wastewater facilities and operations, and threaten waste disposal sites. Public works personnel, land use planners, and utility operators will face additional challenges to provide continued services as the climate changes. Key vulnerabilities include:

- More storms and flooding can overwhelm operations and the service capacity of drinking water systems, which can threaten drinking water availability or cause the need for additional water treatment. Heavy storms can also result in the release of untreated water into local water bodies, threatening water quality.
- Flooding and storms may cause the release of contaminants from Corrective Action sites, Superfund sites, brownfield sites and landfills.
- Sea level rise and storm surge may damage and submerge critical facilities.

Adaptation in Action

The District of Columbia's Blue Plains Wastewater Facility in Washington, DC, serves most of the National Capital area, including parts of Maryland and Virginia. This facility is vulnerable to flooding because of its location adjacent to the Potomac River. The DC Water and Sewer Authority is preparing for more flooding due to climate change. Blue Plains is constructing a seawall that will surpass the recommended 1-in-500 year storm level by including an extra three feet of height for added safety. This will help protect the facility against higher river levels and storm surges. Blue Plains is taking this action to promote resilience under current conditions and adapt to the expected impacts of climate change.

Future seawall at Washington, DC, Blue Plains Wastewater Facility will reduce the risks of flooding

Attaining Ambient Water Quality Standards

More frequent and intense storms are likely to degrade rivers, streams, and coastal water quality. Managers of natural resources, water resources and water quality compliance will face challenges as the climate changes. Key vulnerabilities include:

- More frequent and intense storms may increase runoff of sediment and pollutants from land, leading to erosion into rivers and streams, which degrades water quality.
- These effects, combined with higher water temperatures, may threaten ecosystem health and fisheries.

Adaptation in Action

Tropical Storm Irene washed out an estimated 1,000 transportation culverts in Vermont in 2011. The state and local municipalities decided to rebuild many of these culverts to a standard that reduces current and future vulnerability. Replacing undersized culverts with larger culverts promotes resilience to current levels of flooding and provides adaptive capacity to deal with more frequent and intense storms. The resizing of undersized culverts, combined with actions to promote more natural stream flow, further reduces levels of sedimentation and erosion and allows for greater fish passage. Vermont's Natural Resource Adaptation Report identifies culvert re-design as an adaptation strategy to protect cold-water fisheries and water quality. By taking future climate risks into account, namely the expected increase of precipitation and storms in the Northeast, Vermont is not only promoting resilience to current threats but also adapting to future conditions.

Upgrading transportation culverts will help Vermont prevent washed out roads and runoff into rivers and streams (seen above, after Hurricane Irene).

Maintaining Air Quality and Public Health

Increased temperatures can affect air quality (e.g., ground-level ozone), which can have impacts on public health. More frequent and intense hot weather also poses risks to public health. Public health officials, emergency responders, and community leaders will face challenges to protect public health, especially to the elderly, very young children, those with pre-existing medical conditions and those in low income communities. Key vulnerabilities include:

- Higher levels of ground-level ozone affect people with respiratory and heart conditions.
- More frequent heat waves can increase heat stress and result in death.

Adaptation in Action

Heat waves are the leading weather-related cause of death in the United States. New York City (NYC) assessed its vulnerability to the health impacts of heat waves under current and future climatic conditions. To promote resilience to current and future heat waves, NYC is increasing the use of cooling centers and supporting outreach to share life-saving information with particularly vulnerable people. NYC is also using green infrastructure, reforestation and reflective or cool roofs to reduce the urban heat island effect.

By painting roofs with white or reflective paint, New York City is reducing the urban heat island effect.

For a comprehensive view of projected climate changes in your region, consult:

- ***Climate Change Impacts in the United States: The Third National Climate Assessment***
- ***EPA's Climate Change Adaptation Resource Center***

JUNE 2016
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EPA-230-F-16-013