

WATER FACTS

New York, New York: Identifying and Becoming More Resilient to Impacts of Climate Change



Cities across the United States should anticipate significant water-related vulnerabilities based on current carbon emission trends because of climate change, ranging from water shortages to more intense storms and floods to sea level rise. To help cities become more resilient to the rising threats of climate change, NRDC reviewed more than 75 scientific studies and other reports to summarize the water-related vulnerabilities in 12 cities—including New York. Although there may still be some uncertainty about what particular impacts threaten cities and how quickly or severely they might occur, action at the local level is the most effective method of reducing, mitigating, and preventing the negative effects of water-related climate change outlined in this fact sheet. NRDC urges cities to prepare for coming challenges relating to water resources. Fortunately, there are steps cities are already taking to become more resilient.

The New York City Panel on Climate Change prepared a vulnerability assessment that presents climate trends and projections for New York City and identifies potential risks to the city’s critical infrastructure posed by climate change. Based on this and other research, we know that New York City is vulnerable to:

Summary of water-related climate changes and impacts in New York City throughout the 21st century	
	Rising sea levels
	Increased flooding
	More frequent and intense storm events
	Increased annual precipitation
	Increased saltwater intrusion
	Increased erosion
	Water supply challenges due to increased droughts

● Highly likely
 ● Likely
 ● Possible
 Source: NRDC



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RISING SEA LEVELS

By mid-century, New York City could experience sea levels that are anywhere from 7 to 29 inches higher than they were in 2000, with the latest research suggesting the higher end of that range. Higher sea levels can inundate low-lying areas, including freshwater wetlands and salt marshes, and cause higher rates of beach erosion. In Jamaica Bay, for instance, the natural build-up of the salt marshes is unlikely to keep pace with the accelerated rates of erosion associated with continued sea level rise. This erosion threatens the many benefits provided by the Jamaica Bay salt marshes, including critical wildlife habitat, flooding mitigation, shoreline erosion control, filtration of pollutants from the water, reduction of carbon dioxide in the atmosphere, and recreational opportunities.

SALTWATER INTRUSION

Rising seas could affect the quality of New York City's water supply because rising sea levels send saltwater further up the Hudson and Delaware River estuaries during high tides.

MORE FREQUENT AND INTENSE STORMS

The likelihood that increasingly powerful storms, such as hurricanes and nor'easters, will hit New York's coastline is very high. Heavy rainfall events are also expected to increase. And, mean annual precipitation in New York City is more likely than not to increase. Projections for mean annual precipitation are not as certain as some other effects, but it is the intensity and frequency of extreme events that will have significant impacts, particularly at coastal locations, due to the combined effect of intense storms and higher sea levels. Coastal flooding associated with these storm events, and exacerbated by sea level rise, is predicted to increase as the 21st century progresses. For instance, a 100-year flood (one that today has about a 1 percent chance of occurring in any given year) could occur every 35 to 55 years by mid-century. In dense and low-lying New York City, this flooding would adversely affect major transportation arteries, including highways, rail and air transportation, and the viability of waterfront structures. The southern tip, with expensive real estate within the Financial District, is particularly flood prone.

WARMER TEMPERATURES

Mean annual temperatures are projected to increase by 3 to 5°F by mid-century. By the end of the 21st century the effect of higher temperatures, especially during the summer months, on evaporation is expected to outweigh any increases in precipitation, leading to more drought. Higher temperatures and increased evapotranspiration favor the prevalence of certain infectious microorganisms and pathogens in recreational waters, leading to decreased water quality.

ACTION

New York is leading by example in preparing for the effects of climate change. To discuss just one example of the numerous planning efforts, in 2008 Mayor Bloomberg convened the New York City Panel on Climate Change, which advises the mayor on issues related to climate change and adaptation and provides support to the New York City Climate Change Adaptation Task Force. The panel is composed of climate, legal, insurance, and risk management experts and is modeled after the IPCC. Among its ongoing activities, the NPCC has developed three documents to assist the Adaptation Task Force:

- the Climate Risk Information (CRI) workbook, which contains climate change projections in order to ensure that the impacts identified and the strategies developed by task force members are based on the same information;
- the Adaptation Assessment Guidebook (AAG), which provides an eight-step process by which task force members can identify at-risk infrastructure and develop appropriate adaptation strategies; and
- the Climate Protection Levels (CPL) workbook, which addresses the potential for climate change to affect current regulations and design standards.