WATER FACTS

Los Angeles, California: 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 Los Angeles. 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.

Los Angeles has not yet completed an assessment of its vulnerabilities from climate change, but the city and county are working with regional stakeholders to correct that shortcoming. For this report, we primarily based our assessment of the water-related impacts to Los Angeles from climate change on research from the Pacific Institute and the California Climate Change Center. From this and other research, we know that Los Angeles is vulnerable to:

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

● Highly likely ● Likely ● Possible

Source: NRDC

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SEA LEVEL RISE

Over the last several decades, the sea level along California's coastline has risen at a rate of about 0.67 to 0.79 inch (1.7 to 2 centimeters) per decade, consistent with global sea level rise. Coastal observations and global climate projections indicate that California's coast will experience rising sea levels during the 21st century as well. By the end of the 21st century, sea level is expected to be 20 to 55 inches (50 to 140 centimeters) higher than it was in 2000.

COASTAL FLOODING

Sea level rise is not expected to result in much permanent inundation in Los Angeles, but would still increase the risk of coastal flooding and storm surge. For instance, a 55-inch sea level rise would double the number of hazardous facilities in Los Angeles County at risk from a 100-year flood, such as Superfund sites, hazardous waste generators, wastewater treatment plants, major dischargers of air pollutants, and brownfield properties. Eight power plants would be at risk of a 100-year coastal flood, and flooding could damage power-generating equipment, water intakes, or other peripheral structures. Transportation infrastructure would also be at higher risk of damage due to possible flooded roads and highways. Significant flooding due to anticipated sea level rise is also possible at the Port of Los Angeles and the Port of Long Beach in Los Angeles County, which are central not only to the economies of the state but also the economies of the nation and world.

SALTWATER INTRUSION

Seawater intrusion into aquifers is already a problem along the coast of Los Angeles County. Sea level rise will increase saltwater intrusion into these coastal aquifers and also degrade the quality and reliability of the freshwater supply pumped from the southern edge of the Sacramento—San Joaquin River Delta by increasing its salinity.

INCREASED TEMPERATURE, CHANGES IN PRECIPITATION, AND WATER SUPPLY

Climate models' warming projections for mid-century range from about 1.8°F to 5.4°F (1°C to 3°C), rising by the end of the 21st century to a range of about 3.6°F to 9°F (2°C to 5°C). Climate models also predict a tendency for drier conditions to develop throughout the 21st century, especially in regions of California from where much of Los Angeles' water supply originates. Even small increases in temperature with no change in precipitation may change the timing of flow patterns for rivers in California substantially, with more water flowing in the rivers during the winter and less during the dry season when demand, both agricultural and urban, is highest.

Climate change and attendant disruptions in precipitation patterns could cause an increase in drought periods, and may cause drought to occur in areas outside of California that affect the flow of the Colorado River, which is a source of some of Los Angeles's municipal water. During a recent California drought, low precipitation resulted in water restrictions for urban customers around the state and cuts in irrigation for agriculture. Drought may also lead to an increase in the concentration of contaminants in drinking water supplies.

ACTION

Among the states, California leads the way on addressing climate change, in terms of both mitigation and adaptation. In Los Angeles has made some progress toward climate change planning, such as the Climate LA and Green LA planning documents, but those efforts require updating. When compared with other large cities, Los Angeles lags a bit in terms of local vulnerability assessments, but the city and county are working with regional stakeholders in a group called the Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC) to correct that shortcoming. Currently the group is working on an inventory of greenhouse gas emissions and specialized modeling efforts to determine how Los Angeles would look under various emissions-reduction scenarios for the years 2030 and 2060. The information gleaned from those efforts will be used to develop a climate action plan.

Finally, the Los Angeles Department of Water and Power and numerous experts are analyzing the impacts of climate change on water supplies from the eastern Sierra Nevada. This effort is designed to allow LADWP to better evaluate adaptation strategies for an important water source that is dependent upon snowpack and snowmelt.