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Climate Change in Illinois: Urban Impacts

As emissions rise, climate change impacts—including rising heat, floods, and worsening air quality—will affect Illinois communities across the state. Chicago and other cities in Illinois will face risks and challenges that are unique to developed, urban environments. The impacts of climate change will depend on where you live and other factors that increase vulnerability to climate impacts, such as socioeconomic status.

Climate Change in Illinois Cities

Urban heat island effect: High temperatures—especially in combination with high humidity and high nighttime temperatures—can cause a variety of heat-related illnesses, ranging from mild heat rash to heat stroke. Urban areas with little green space and significant asphalt, concrete, and brick tend to get hotter and stay warmer at night than rural areas, making it more difficult for people to cool down. This problem—known as the urban heat island effect—will get worse in a warming climate, resulting in record temperatures in some urban and suburban areas. If emissions do not decline substantially, heat waves like the deadly 1995 Chicago heat wave could occur as often as once a year by the 2050s.

Urban flooding: Flooding is a costly and prevalent problem in Illinois urban areas due to aging and undersized stormwater systems and extensive land development. An increase in heavy rainfall due to climate change will exacerbate flooding and runoff in already stressed urban areas. More flooding and runoff will result in a higher risk of water-borne infectious diseases and mold exposure. Without upgrades to infrastructure, more intense storms are expected to cause more outbreaks of gastrointestinal infections, especially in children.

Ozone: Ozone pollution has increased in many American cities owing to record breaking temperatures. As temperatures rise, ozone is expected to continue increasing, resulting in more frequent asthma attacks. According to the American Lung Association, high ozone has the potential to impact significant numbers of people in the Chicago region, which has been identified as one of the top 20 most polluted cities in terms of ozone. Peoria and the Metro East region near St. Louis also receive poor ozone scores.

Vector-borne diseases: The urban heat island effect may make large urban centers, including Chicago, more prone to the invasion and establishment of species that carry vector-borne diseases. For instance, projected changes in temperature and urbanization suggest that, by 2050, Cook County will be considered moderately suitable for the mosquito that transmits dengue fever, a mosquito-borne infection caused by the dengue virus.

Lake Michigan: Warmer winters have already resulted in less ice cover, reducing shoreline protection and increasing coastal erosion in Lake Michigan. More intense rain events will increase runoff and could adversely affect water quality in the lake, which is known to decrease at Chicago beaches after heavy rainfall. Water levels in the lake may increase or decrease owing to climate change—an area of great uncertainty. Wetter winters and springs could increase lake levels, resulting in damage to coastal infrastructure, whereas warmer temperatures that increase evaporation could drop lake levels. Warmer water temperatures are likely to impact the distribution of fish species in the lake, although exact impacts are difficult to project.

Inequitable Impacts

Within cities, climate change is expected to exacerbate existing stressors and health disparities, likely with worse impacts in low-income communities and communities of color. For instance, people of color and low-income earners are more likely to have asthma, self-report fair or poor health, and live in areas with less green space—factors that place them at higher risk from the effects of extreme heat as well as ozone pollution. The urban heat island effect is particularly strong in neighborhoods with fewer trees and parks. Under-resourced communities suffer a disproportionate burden from storm flood impacts, owing to the confluence of low property values and inadequate infrastructure in low-lying, flood-prone areas.

Pathways Forward

Communities can better prepare for the effects of climate change by integrating climate change information into adaptation strategies. It is important to consider climate change in public health planning processes; to improve built and green infrastructure for better outcomes; and to create strategies that address climate change through an equity lens.

The Nature Conservancy's Contributions

TNC works closely with partners in Cook County and beyond to identify and implement equitable solutions to climate change. For example, we are working with partners on the Far South Side of Chicago to help communities increase the tree canopy for better air quality and reduced summer heat through the Imani Green Health Advocates program. In suburban Cook County, we are helping communities participate in the Metropolitan Water Reclamation District's stormwater credit trading program to help fund new stormwater natural infrastructure in the most vulnerable communities, a project known as StormStore™.



Chicago Greenprint

TNC created Chicago Greenprint to identify where nature-based solutions can alleviate challenges related to climate change in Cook County's communities. Chicago Greenprint is a mapping tool that analyzes multiple layers of data to determine which neighborhoods are at highest risk for climate change impacts, including flooding, poor air quality, and excessive heat. It considers data on which areas are home to high concentrations of youth, older adults, and low to moderate income families, who are particularly vulnerable to these impacts. The tool can be used by communities and other stakeholders to understand the risks they face and to identify areas that could benefit from green infrastructure, such as rain gardens, bioswales, and additional greenspace.

To learn more about Chicago Greenprint and to access the tool, please visit our [storymap](#).

Learn more about climate change in Illinois in the report, *An Assessment of the Impacts of Climate Change in Illinois*, on our [website](#).

