

CHICAGO PREPARES FOR FUTURE HEAT IMPACTS

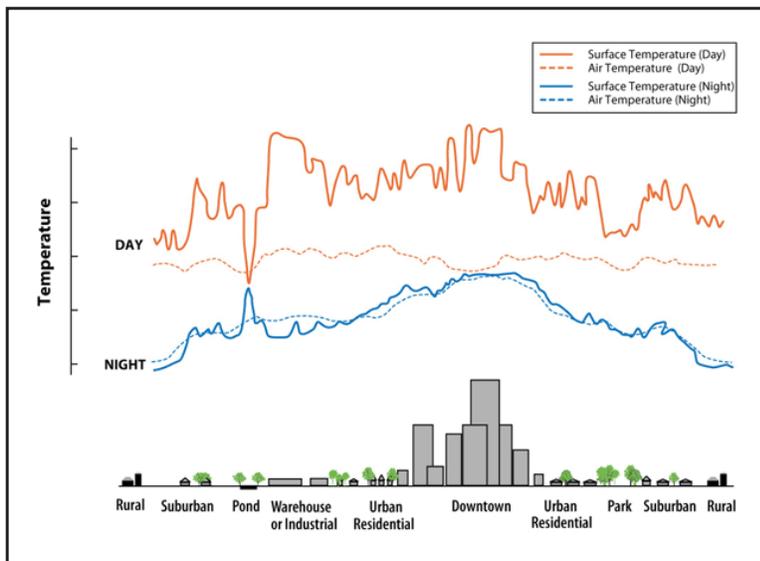
High-humidity heat waves are expected to occur more frequently.

Heat Waves

Chicago, Illinois. Heat is the leading cause of weather-related death in the United States. In Illinois, deaths attributed to heat have averaged 74 per year, with the state experiencing two of its most deadly heat waves during the 1990s. The 1995 heat wave, the deadliest on record, led to over 700 deaths, while the 1999 heat wave killed nearly 110 people.

In the past few decades, high-humidity heat waves have been an increasing trend. The high humidity not only makes it more difficult to keep cool during the day, but also results in extremely high nighttime temperatures. These warmer nights offer little relief after the hot, humid daytime conditions.

Chicago tends to be warmer by a couple of degrees, on average, than surrounding areas. This urban heat island effect is caused by the heat-trapping characteristics of buildings, asphalt, and concrete, leading to higher temperatures in cities and suburbs than in surrounding rural areas.



The term “heat island,” or “urban heat island,” is used to describe built-up areas that are hotter than nearby rural areas due to the replacing of open land and vegetation with buildings, roads, and other infrastructure. The temperature difference is felt on these surfaces, as well as in the air surrounding them.

Graphic from the U.S. Environmental Protection Agency’s Heat Island Effect webpage

By the end of this century, according to projections, heat wave events that now occur once every 20 years could occur about every other year. Extreme events like the record-setting 1995 Chicago heat wave could occur about once every three years. If this problem is not addressed, the average number of deaths from heat waves is projected to double or even triple by 2050, as the number of Chicago heat wave days quadruples.



The Chicago City Hall rooftop garden, or green roof, began in April 2000 as a demonstration project and covers over 20,000 square feet.

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Strategies to mitigate increasing temperatures create many additional benefits.

The Response

Officials in the Chicago metropolitan area have been working for over 10 years to prepare for and respond to urban heat. The Chicago Climate Task Force developed a Chicago Climate Action Plan, the sustainability plan for the city of Chicago, which identifies ways to adapt to increasing urban temperatures. Changes to heat warning criteria by the National Weather Service and programs implemented by the city since 1995 likely helped keep the number of deaths at 14 during the recent 2011 heat wave.

The Office of Emergency Management and Communications (OEMC) maintains the city's Extreme Weather Operations Plan, which identifies the responsibilities of city and partner organizations in the event of extreme heat. City staff members, health care institutions, and community organizations work together to assist at-risk populations through Notify Chicago and Alert Chicago. The city's Department of Family and Support Services (FSS) operates six community service centers, and OEMC coordinates with FSS and other city departments to operate up to 928 additional facilities as cooling centers for relief during periods of high heat. During emergencies, public facilities with water features such as pools and water playgrounds operate with extended hours. Many surrounding communities have similar programs.

Through public-private partnerships, new trees that can thrive in warmer conditions are being planted across the metropolitan area in parks, parkways, and private yards. Increasing the urban forest canopy reduces urban temperatures and provides win-win benefits by improving air quality and decreasing the amount of energy required to cool buildings. Rooftop gardens offer similar heat-reducing benefits and also capture rainwater for reuse during dry periods. The Chicago City Hall rooftop garden, which began in April 2000 as a demonstration project, covers over 20,000 square feet of roof. More than 4.4 million square feet of green roofs are finished or under construction across the region, ranging from large commercial projects to small residential ones.