

Climate and Health in Illinois

Climate change is affecting human health in a variety of ways, right in our backyards. People in the Prairie State are vulnerable to climate-related health threats from worsening air quality, extreme heat, extreme precipitation and flooding, and greater exposure to dangerous diseases. We must take action now to ensure a healthy climate for our children and grandchildren.

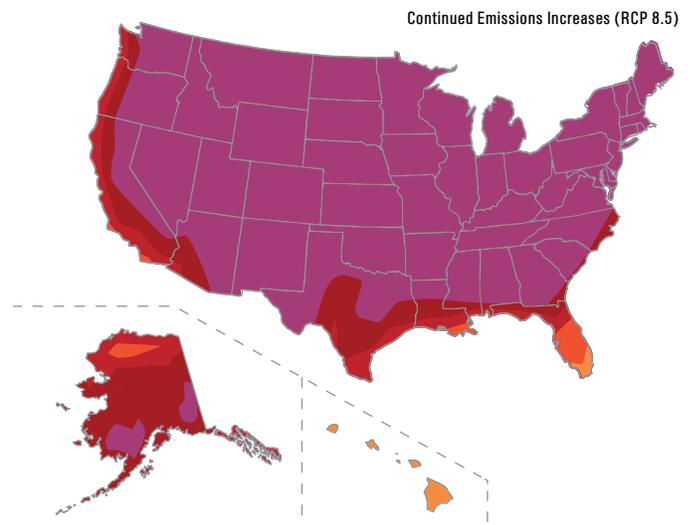
Last year the U.S. Environmental Protection Agency (EPA) proposed the Clean Power Plan, a common-sense approach to protecting public health by limiting, for the first time, carbon pollution emitted by existing power plants, the largest driver of climate change. The plan deserves strong support as one of the biggest steps forward to tackle climate change and reduce its associated health risks.

Climate change is expected to affect the health of people in Illinois in the following ways:

1. Extreme Heat and Heat Waves Lead to Increased Illness and Death

As temperatures reach more frequent and hotter highs, death and illnesses occurring from heat stress, heatstroke, cardiovascular disease, kidney disease, and other causes often increase.¹

- Nationally, heat extremes are projected to become more common, with summer highs that ranked among the hottest 5 percent in 1950–1979 rising to at least 70 percent of the time by 2035–2064.² Yesterday's extreme temperatures could become tomorrow's normal temperatures, with even worse extremes.
- If carbon pollution emissions are not substantially reduced, heat waves like the deadly July 1995 Chicago heat wave—which killed more than 700 people—could occur as often as once every two years by the 2050s.^{3,4}
- Far worse heat waves, like the European one in 2003 in which more than 30,000 perished, will occur during half of all summers by the 2080s.⁵
- In Illinois, under a scenario in which emissions increase, the heat waves of 1988 and 2011 will pale compared with the heat of 2084. For example, Cook County experienced an abnormally high 27 days over 90°F in 2011; 62 such days are projected for the 2080s.⁶
- Heat-related deaths are also projected to sharply increase under this scenario, with Chicago potentially facing an increase of as much as 120 percent by the 2080s.⁷

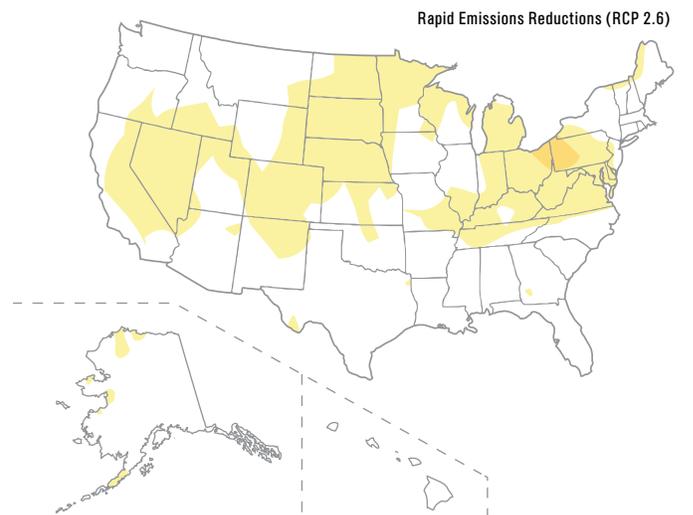


PROJECTED CHANGE IN TEMPERATURE (F°)

≤2 3 4 5 6 7 8 9 10 ≥11

The maps show projected increases in the average temperature on the hottest days by late this century (2081-2100) relative to 1986-2005 under a scenario that assumes a rapid reduction in heat-trapping gases (RCP 2.6) and a scenario that assumes continued increases in these gases (RCP 8.5). The hottest days are those so hot they occur only once in 20 years. Across most of the continental United States, those days will be about 10 F to 15 F hotter in the future under the higher emissions scenario. (Figure source: NOAA NCDC / CIACS-NC)

Adapted from: Luber, G., et al. Human Health. Climate Change Impacts in the United States: The Third National Climate Assessment. J.M. Meillio, Terse (T.C.) Richmond, and G. W. Yohe, Eds. U.S. Global Change Research Program, (2014). 220-256, <http://nca2014.globalchange.gov/report/sectors/human-health>



For more information, please contact:

Aliya Haq
ahaq@nrdc.org
switchboard.nrdc.org/
blogs/ahaq

www.nrdc.org/policy
www.facebook.com/nrdc.org
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2. Climate Change Worsens Air Pollution That Threatens Our Health

Rising temperatures, along with greater air stagnation and other climate effects, increase ground-level ozone smog.⁸

- The more than 1.7 million people with asthma or chronic respiratory disease in Illinois are especially vulnerable to the harmful health effects of ozone smog, which makes it harder to breathe.⁹
- Eleven counties in Illinois currently have ozone levels that exceed EPA standards, and models indicate that areas with high ozone levels, like Chicago, are at risk of even greater ozone smog pollution due to climate change and rising temperatures.^{10,11}
- A Harvard analysis shows that the health benefits from reducing particles and smog could save 2,100 lives and prevent 760 hospitalizations in Illinois from 2020-2030, and at the same time reduce carbon pollution to limit longer-term climate change.¹²

3. Allergen Risks Rise

The elevated carbon dioxide levels and higher temperatures associated with climate change are already altering the range of plants' occurrence and the timing of bloom, leaf, fruit, and pollen production.¹³

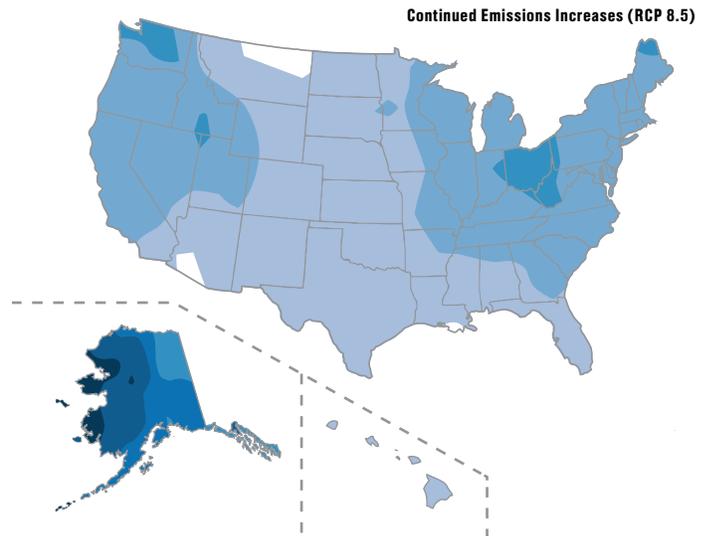
- More pollen produced over longer pollen seasons can worsen allergic symptoms and trigger asthma attacks, especially when combined with other air pollution.¹⁴
- Within the Midwest, the northward shifts of certain plant species and an extended growing season are expected to lead to greater allergy and asthma risks, particularly for ragweed.¹⁵ Illinois may also face moderate increases of allergenic tree pollen.¹⁶

4. Extreme Storms and Floods Proliferate

Heavy-precipitation events are already on the rise in the United States, and their frequency and magnitude are expected to increase in the years to come.¹⁷

- Extreme rainfall events have become 16 percent more frequent in Illinois over the past 60 years, and average annual precipitation in Illinois has increased by 3.6 inches in the past century.^{18,19}
- These heavy rains not only increase the risk of flooding, the second-deadliest of all weather-related hazards in the nation,²⁰ but can also lead to drinking water contamination and disease outbreaks.²¹
- Chicago beach closures due to contamination have been linked to heavy precipitation.²²

- Heavy precipitation, flooding, and subsequent runoff can also lead to more harmful algal blooms.²³
- As in many other Midwestern states, numerous Illinois communities use combined sewer systems, which handle both sewage and rainwater in a single pipe system. These can overflow during high precipitation, sending untreated sewage and disease-causing pathogens into local water supplies.²⁴ These overflows are projected to occur more often as extreme precipitation grows more common.²⁵



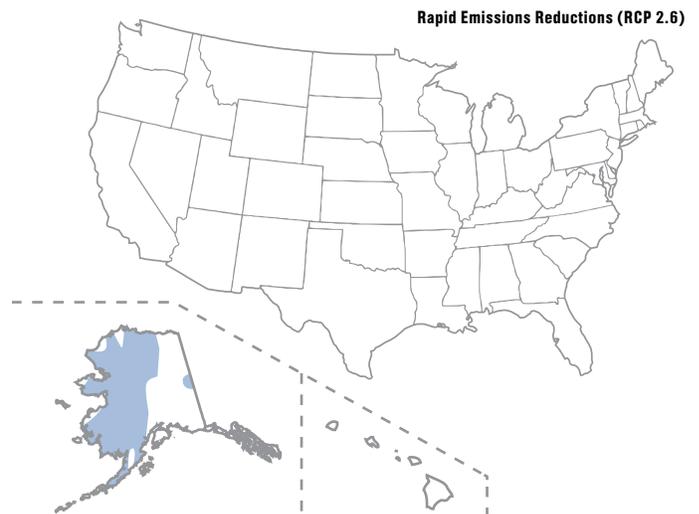
PROJECTED CHANGE IN HEAVY PRECIPITATION

Future Change Multiplier 1 2 3 4 5 6 7

Maps show the increase in frequency of extreme daily precipitation events (a daily amount that now occurs just once in 20 years) by the later part of this century (2081-2100) compared to the latter part of the last century (1981-2000). Such extreme events are projected to occur more frequently everywhere in the United States. Under a rapid emissions reduction scenario (RCP 2.6), these events would occur nearly twice as often. For a scenario assuming continued increases in emissions (RCP 8.5), these events would occur up to five times as often.

(Figure source: NOAA NCDC / CIACS/NC)

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5. Insect-Borne Infectious Diseases Spread

Climate change is among the factors affecting the health risks from disease-carrying insects. Short- and long-term climate changes—such as increasing temperature and humidity and shifting rainfall patterns—can expand the range of insect hosts.²⁶

- Since 2004 Illinois has reported 1,155 cases of West Nile virus and 1,587 cases of Lyme disease.²⁷
- Eastern portions of Illinois have been identified as potential future expansion areas for the deer tick, a major path of transmission for Lyme and other diseases.²⁸

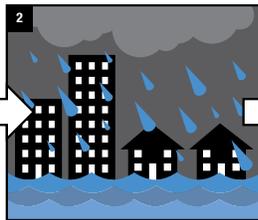
6. Elderly, Young, and Low-Income Populations Are Especially at Risk

The elderly, children, and economically disadvantaged people face particularly acute risks from climate-related health threats. Today Illinois has 1.7 million residents 65 years old or older, over 3 million children, and a low-income population of 1.8 million.²⁹

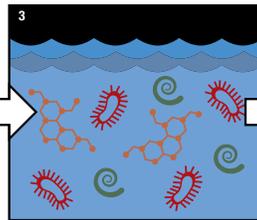
HEAVY DOWNPOURS INCREASE DISEASE EXPOSURE



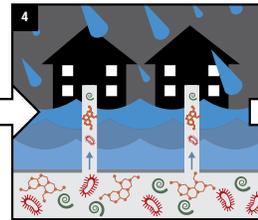
Climate change increases heavy downpours.



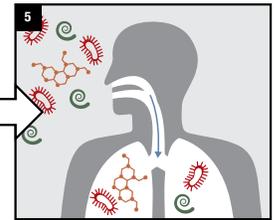
Streams and rivers rise, which contributes to flooding of homes, businesses, and critical infrastructure like sewer and storm water systems.



Floodwaters can become contaminated with agricultural waste, chemicals, raw sewage, and other pollutants. They can contain disease-causing bacteria, viruses, and parasites.



Sewage overflow from treatment plants, septic fields, and municipal lines can back up into people's homes.



Flooded materials in homes, schools, and businesses can cause molds to grow and be inhaled.

Adapted from Lubner, G., et al. Human Health. Climate Change Impacts in the United States: The Third National Climate Assessment. J.M. Melillo, Terse (T.C.) Richmond, and G. W. Yohe, Eds. U.S. Global Change Research Program, (2014): 220-256, <http://nca2014.globalchange.gov/report/sectors/human-health>

ACTING ON CLIMATE

NRDC strongly supports the EPA's Clean Power Plan, which will reduce the biggest source of carbon pollution driving climate change by at least 30 percent by 2030. It is important for each state to create a State Implementation Plan that puts the goals of the Clean Power Plan into action. The states have the flexibility to design pollution-curbing strategies that work best for them, based on their current energy mix and opportunities to develop energy efficiency and clean renewable power. States should demonstrate leadership by moving ahead with those implementation plans.

We are running out of time to address this great environmental challenge of our day, but we are not out of solutions. We need to act on them now. We have an obligation to our children—and our children's children—to tackle climate change now.

ENDNOTES

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