

Climate and Health in Pennsylvania

Climate change is affecting human health in a variety of ways right in our backyards. People in the Keystone 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, the 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 Pennsylvanians in the following ways:

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

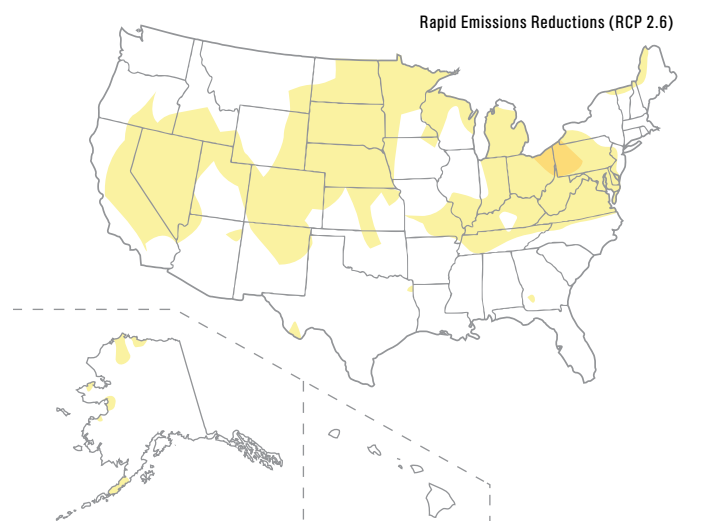
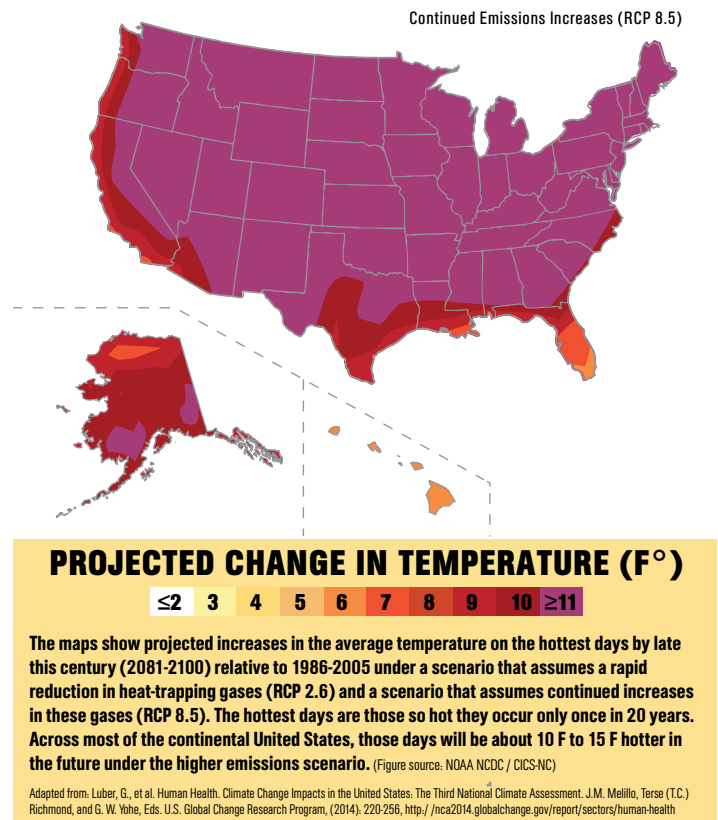
As temperatures reach more frequent as well as hotter highs, death and illnesses occurring from heat stress, heatstroke, cardiovascular disease, kidney disease, and other causes often increase.¹

- 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.
- Climate scientists project that extreme heat days in Pennsylvania will be two to three times more common by the 2020s than they are today. By 2084, cities like Philadelphia could experience temperatures topping 90°F on more than 80 days per year—four times more often than in 2011.³

2. Climate Change Worsens Air Pollution That Threatens Our Health

Rising temperatures, along with more air stagnation and other climate effects, increase ground-level ozone smog.⁴

- Increasing levels of ozone smog can harm the health of more than 1.9 million people with asthma or chronic respiratory disease in Pennsylvania, making it harder for them to breathe.⁵



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- Seventeen counties in the state currently have ozone smog levels that exceed EPA standards.⁶
- Climate scientists warn that areas with high ozone today are at risk of even higher ozone smog pollution levels, due to climate change.⁷
- Allegheny County in the western part of the state has some of the worst air quality in the nation; rising temperatures fueled by climate change will compound the health challenges there.⁸
- A Harvard analysis shows that the health benefits from reducing particles and smog could save 3,300 lives and prevent 710 hospitalizations in Pennsylvania from 2020-2030, and at the same time reduce carbon pollution to limit longer-term climate change.⁹

3. Allergen Risks Rise

Elevated carbon dioxide 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.¹⁰

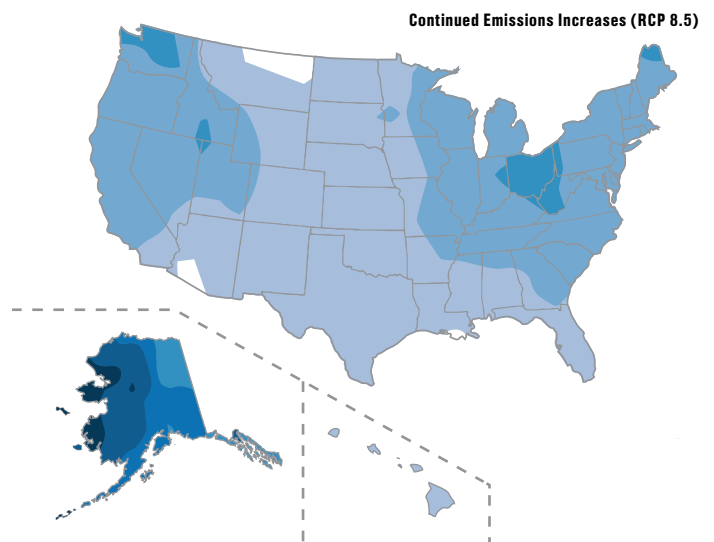
- Pennsylvania may face large increases of allergenic tree pollen.¹¹ More pollen produced over longer pollen seasons, especially when combined with other air pollution, can worsen allergic symptoms and trigger asthma attacks.¹²
- Increased and more variable precipitation in the state could create more favorable conditions for flooding and water damage that contributes to mold growth and dispersal.¹³

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.¹⁴

- Extreme rainfall events have become 52 percent more frequent in Pennsylvania over the past 60 years.¹⁵
- These heavy rains not only increase the risk of flooding, the second-deadliest of all weather-related hazards in the nation, but can also lead to drinking water contamination and disease outbreaks.^{16,17}
- In Philadelphia, observed sea level rise over the past century has been relatively rapid, bringing greater flooding risks to the city's urban infrastructure.¹⁸
- Many areas of Pennsylvania use combined sewer systems, which handle both sewage and rainwater in a single pipe network. These combined systems can overflow during high precipitation, sending untreated sewage and disease-causing pathogens into local water supplies. Overflows are projected to occur more often as extreme precipitation grows more common.¹⁹
- According to the American Society of Civil Engineers, Pennsylvania has the greatest number of combined sewer outfalls of any state in the nation.²⁰

- Pennsylvania's Climate Impact Assessment found that heavy rainfall can lead to contamination from livestock operations, while abnormally low flow can lead to lower dilution of effluents from sewage treatment plants.²¹
- Climate change is expected to contribute to both bigger storms and bigger droughts in Pennsylvania, according to a report prepared for the Pennsylvania Department of Environmental Protection by Pennsylvania State University.²²



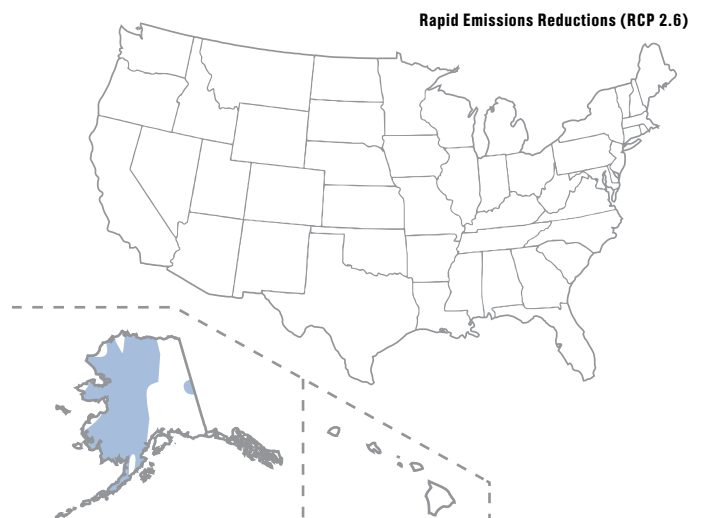
PROJECTED CHANGE IN HEAVY PRECIPITATION

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)

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



5. Insect-Borne Infectious Diseases Spread

Climate change is among the factors affecting the health risks from disease-carrying insects. Short- and long-term changes in climate can expand the range of these insects.²³

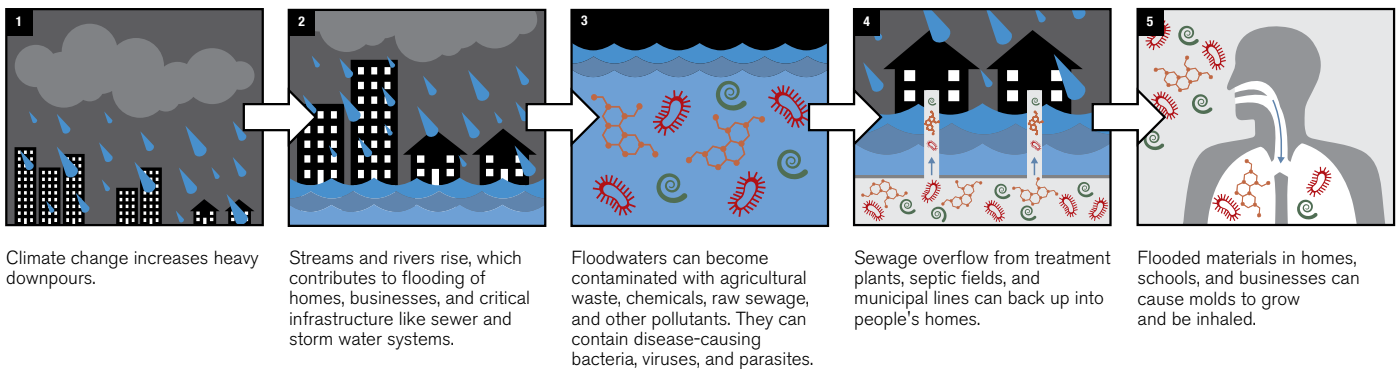
- Since 2004, Pennsylvania has reported 178 cases of West Nile virus from mosquitoes and 41,440 cases of Lyme disease from ticks—the highest number of Lyme cases in the nation.²⁴
- The Asian tiger mosquito, which can carry diseases including West Nile virus and dengue fever, is projected to substantially increase its range across Pennsylvania within the coming decades.
- Higher carbon emissions scenarios are projected to further increase temperatures and disrupt rainfall in ways that could increase this mosquito's range even more rapidly and broadly.²⁵

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

The elderly, children, and the economically disadvantaged face particularly acute risks from climate-related health threats:

- There are more than 2 million people 65 years old or older, more than 2.7 million children, and nearly 1.7 million economically disadvantaged people in Pennsylvania.²⁶
- The city of Philadelphia has an overall poverty rate of 26.3 percent compared to a national rate of 15.4 percent. Nearly 36 percent of children and more than 40 percent of Latinos in the city are living below the poverty line.²⁷
- In Pennsylvania's cities, urban heat islands, along with existing disparities in health faced by low-income groups and minorities, will only be exacerbated by climate change. And extreme weather events may devastate communities that lack resources to rebuild.²⁸

HEAVY DOWNPOURS INCREASE DISEASE EXPOSURE



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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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