Union of Concerned Scientists

FACT SHEET

What Voters (and Presidential Candidates) Need to Know about Climate Change

Climate Impacts in Early Primary States

HIGHLIGHTS

The findings of the most recent National Climate Assessment show that states across the country are already experiencing impacts of climate change in varying degrees. These impacts, which include rising temperatures, drought, wildfire, heavy rains, and rising sea levels, will increase in intensity over the coming years—and threats including new diseases and invasive species may appear—unless the federal government acts to quickly and dramatically reduce the emissions that drive global warming. Voters in states holding early caucuses or primaries have an exceptional opportunity to tell candidates for the 2020 presidential election about the impacts projected for their states, and to push the candidates to commit to taking the necessary action if they are elected.

Voters in the early caucus and primary states of Iowa, New Hampshire, Nevada, and South Carolina have the unique opportunity to interact with many of the candidates for the 2020 presidential election, and to learn where climate change fits among their top priorities if elected president.

Science tells us that the window for preventing temperatures from rising 1.5°C above pre-industrial levels, as recommended in the 2017 Paris climate agreement, is closing: the most recent report by the United Nations' Intergovernmental Panel on Climate Change found that global warming may reach 1.5°C as soon as 2030 if carbon emissions continue increasing at their current rate (IPCC 2018).

In the United States, the impacts of higher temperatures are already being felt in every part of the country. The most recent National Climate Assessment, produced by more than 300 experts at various universities and government labs and agencies, examined these impacts and the damages we can expect—or limit—depending on our choices in the coming years (USGCRP 2018). As shown in the table on p. 2 and described on the pages that follow, the news is not good. But there are solutions, if voters can persuade the next president and Congress to show real leadership and take the actions needed to dramatically reduce the emissions responsible for the climate crisis.

Elizabeth Stilwell/Creative Commons (Flickr)

Federal policies to curb heat-trapping emissions are imperative to mitigating the effects of climate change. Voters in early primary states have an exceptional opportunity to persuade 2020 presidential candidates to take action.

Iowa (Midwest Region)

The 12-month period ending in April 2019 was the wettest in the United States since record keeping began 124 years ago. Climate change has already made it more difficult for Iowa's farmers to store their grain, preserve their soil, and avoid crop pests and disease. Increasingly heavy rains will make erosion even more likely and will further reduce the number of growing days, offsetting any gains warmer temperatures would have on the growing season (Angel et al. 2018).

These conditions also take their toll on the people of Iowa. Extreme heat threatens to raise costs and make work less safe and workers less productive. Lost labor hours, heat-related illness, higher incidences of pest-borne diseases, worsening air and water quality, longer pollen seasons, and heavy rains and flooding in the Midwest are expected to result in substantial loss of life and billions of dollars in

Russ Munn/AgStock Images

A flooded farm in Wever, Iowa, in 2012. Hotter and wetter conditions are projected to reduce agricultural productivity across the Midwest to the levels of the 1980s (Angel et al. 2018).

Communities can respond by demanding action to reduce emsissions and by adopting adaptation strategies.

Days per Year with a Heat Index (or "Feels-Like" Temperature) above 105°F

		Historical	Late Century (No Action)	Late Century (Rapid Action)
Iowa	*Statewide Average*	2	39	11
	Des Moines	2	42	12
	Iowa City	3	46	16
New Hampshire	*Statewide Average*	0	10	0
	Manchester	0	16	1
	Portsmouth	0	16	1
Nevada	*Statewide Average*	0	5	1
	Carson City	0	1	0
	Las Vegas-Henderson	3	60	20
South Carolina	*Statewide Average*	5	71	24
	Columbia	5	71	24
	Charleston-North Charleston	4	77	24

A 2019 report by the Union of Concerned Scientists found that with no action to reduce heat-trapping emissions, cities and states throughout the United States would experience dramatic increases in extreme heat and humidity by late-century. In an average year, many locations would face the equivalent of one week to more than two months with a heat index above 105°F. Rapid action to curb emissions would reduce the number of days per year with a heat index above 105°F in the locations shown here by more than half (Dahl et al. 2019).

damages by mid-century. Communities can respond by demanding action to reduce emissions and by incorporating adaptation strategies into their planning, which will help minimize the risks. Iowa State University researchers, for example, are showing farmers how to preserve healthy soil by alternating row crops with strips of native prairie vegetation.

New Hampshire (Northeast Region)

Seasons in New Hampshire are changing. Milder winters, earlier springs, and increasing rainfall are widely acknowledged by Granite Staters. Without action to reduce carbon emissions, these trends will threaten many people's livelihoods. Periods of extreme heat will have harmful health impacts, especially in New Hampshire's cities, where the urban heat island effect makes matters worse. And because much of the Northeast's infrastructure is nearing the end of its expected life, heavy rains, higher temperatures, and rising sea levels will put New Hampshire's power supply and public services to the test (Dupigny-Giroux et al. 2018).

Flooding threatens people who live near the coast—not only from more powerful storms that will produce higher and deadlier storm surge, but also from increasingly routine tidal flooding. A 2018 report by the Union of Concerned Scientists found that approximately 2,000 homes in New Hampshire—housing some 3,000 people—are at risk of being chronically inundated by tidal flooding within the next 30 years (Dahl et al. 2018). Many of these homeowners are older and more likely to have much of their wealth tied up in their property, which provides a significant share of the tax revenue that funds these communities' critical services.

Ron Sher

Tidal flooding events have increased four-fold in some East Coast cities since 1970, including Seabrook, New Hampshire, pictured above (Dahl et al. 2018). As the likelihood of chronic inundation increases, threatening to alter the landscape and livability of coastal communities, elected officials must look to mitigate the impacts and manage what lies ahead.

Taylor Elkins/USFS

Temperatures in the 90s and dry weather conditions led to Nevada's Owyhee Fire in July 2018. Without action to address climate change, Nevada can expect more than five times the number of days per year (68) that feel like 90°F or hotter by late-century compared with the historical average (12)(Dahl et al. 2019).

Nevada (Southwest Region)

Given the vital role the water supplied by the Colorado River plays in many Nevadans' lives, water conservation must be a priority in an increasingly hot future. High temperatures due mainly to climate change were responsible for 17 to 50 percent of the record-setting streamflow reductions between 2000 and 2014. The volume of water in Lake Mead has dropped by 60 percent since 2000, and competition for scarce water resources will put more pressure on Nevada's crops and livestock, as well as on its cities and indigenous peoples, many of whom have been forced to live in particularly water-scarce areas (Gonzalez et al. 2018).

> ***The impacts of climate change, from flooding to wildfires, can be felt across the country and will only continue to worsen.***

The Southwest can also expect more wildfires; climate change is estimated to have doubled the amount of forest area that burned across the western United States between 1984 and 2015 (Gonzalez et al. 2018). The 2018 Martin fire was the largest in Nevada's history (Featherston 2018).

The combined effects of drought and higher temperatures are also decreasing the ability of hydropower to meet Nevada's energy needs. The state has work to do to keep its lights on and its taps flowing, and to improve its public health systems and infrastructure.

South Carolina (Southeast Region)

South Carolina is already feeling the effects of sea level rise and heavy rains, but other impacts of climate change such as dangerous temperatures, humidity, and pest-borne diseases are expected to be more of a problem in the coming decades. The state's agriculture and forest products sectors are vulnerable to extreme heat, wildfire, and invasive species, and downturns in farming and timber would be difficult for some rural communities to overcome. Across the Southeast, extreme heat could result in more than a half-billion lost work hours by the end of the century, along with the associated impacts on people's health. South Carolinians who live along the coast face the additional threat posed by sea level rise; the city of Charleston experienced record high-tide flooding in both 2015 and 2016 and had already spent or set aside $235 million for improved drainage (Carter et al. 2018).

South Carolina has more homes at risk from chronic inundation than all but four other states (Dahl et al. 2018).

Chris Allan/Shutterstock

Children cool off on a hot day at the Pineapple Fountain in Charleston. South Carolina is projected to experience a lot more of these days without decisive action on climate change—rapidly reducing heat-trapping emissions could cut days that feel like 105°F or hotter from 71 per year to 24 per year by late-century (Dahl et al. 2019).

Within 30 years, more than 16,000 homes in the state could be inundated, and by the end of the century, that number jumps to nearly 116,000—home to about 186,000 people and worth a total of roughly $52.7 billion. As in New Hampshire, many of these homeowners are older, and many of the properties are located in popular vacation destinations such as Hilton Head and Kiawah Islands, where these homes contribute 10 and 20 percent of local tax revenue, respectively.

States Are Already Taking Action

Decades of underinvestment in our country's aging but vital infrastructure increases the odds of its failing under the pressures of extreme weather and heat. Repairing or replacing damaged or destroyed infrastructure will come with a high price—but we can still avoid some of the costs by acting to quickly and dramatically reduce the carbon emissions driving global warming.

An EPA study conducted for the National Climate Assessment found that lowering emissions could prevent about 60 percent of the damage to roads and electricity infrastructure that would occur if we did nothing (EPA 2017). Lowering emissions could also prevent about 50 percent of work hours lost due to extreme heat—saving $80 billion in lost wages every year.

The tools to meet aggressive emissions-reduction and clean energy goals are already available and cost-effective. Many states and communities are setting an example for the federal government by putting them to use.

- **Iowa** is a national leader in renewable energy development, with wind power accounting for one-third of in-state generation in 2018 (AWEA 2019).
- As the costs for wind, solar, and other forms of low-carbon energy have fallen (EIA 2018), **Nevada** recently adopted a requirement of 50 percent renewable energy by 2030—with a goal of achieving 100 percent carbon-free power by 2050—and offers support for solar panel installations on residential rooftops.
- **New Hampshire** is a participant in the Northeast Regional Greenhouse Gas Initiative, a market-based effort among nine states to reduce the power sector's carbon emissions, and the state recently passed a law that will bring solar power to low-income communities. New Hampshire utilities have begun deploying several advanced energy storage pilot projects.
- Native American communities in **Nevada** (the Te-Moak Tribe of Western Shoshone/Battle Mountain Colony, the

Washoe Tribe of Nevada and California, and the Yerington Paiute Tribe) are in the planning stages of renewable energy projects (Office of Indian Energy n.d.).

- The **South Carolina** legislature recently passed a measure that will significantly increase the amount of solar development on homes and businesses.

> ***The tools to meet these aggressive clean energy and emissions-reduction goals are already available.***

The Time for Federal Leadership Is Now

State-level action alone is not enough to avoid the worst consequences of climate change. Voters in early primary states have an exceptional opportunity to tell the White House and Congress that they can—and must—take the following steps to deliver the steep reductions in heat-trapping emissions we need:

- **Put a price tag on carbon emissions.** An economywide price on carbon can ensure that the costs of climate change are considered in our energy production and consumption decisions, and encourage the necessary shift from fossil fuels to renewables. The resulting revenue can be invested in clean and efficient technologies, adaptation strategies, energy rebates for low-income families, and assistance for workers and communities currently dependent on fossil fuel jobs.
- **Pass national clean energy and clean vehicle standards.** A low- or zero-carbon electricity standard in combination with stronger fuel economy and emissions standards for vehicles will expand the market for cleaner options, driving costs down and improving public health.
- **Fund infrastructure resiliency projects.** Most development plans do not currently account for the effects of climate change, but we must safeguard our communities and their most vulnerable residents by ensuring critical infrastructure is designed to withstand extreme heat and weather.
- **Drive innovation.** Research, development, and deployment of new technologies can help accelerate the electrification of the US transportation sector and the modernization of the outdated US power grid (which is needed to accommodate high levels of renewable electricity).

Only by embracing a future fully powered by clean, carbon-free energy can we put the brakes on the climate crisis and save our economy, environment, and people.

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