

Looking for a US 'climate haven' away from heat and disaster risks? Good luck finding one

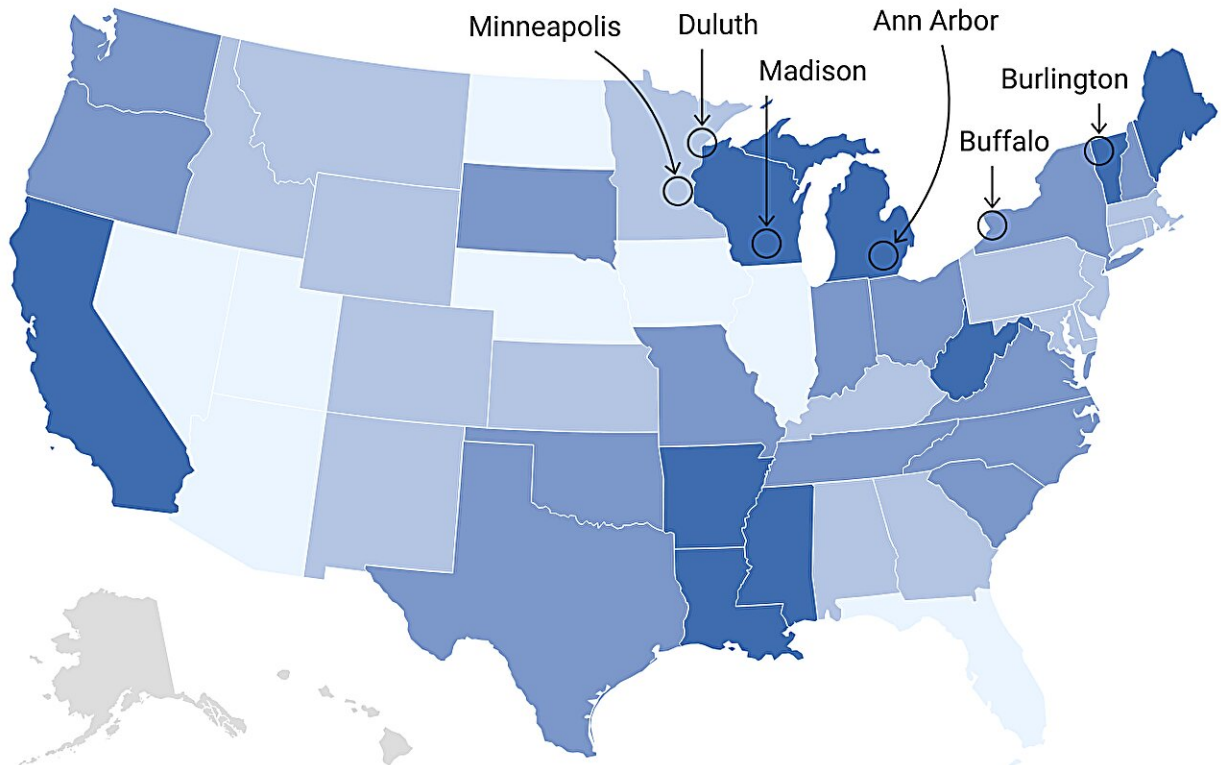
August 24 2023, by Julie Arbit, Brad Bottoms and Earl Lewis

Where Americans face long power outages

Three of these "climate haven" cities are in states that can have some of the longest average power outages in the country. The average outage times per customer was measured in 2019.

Average power outage duration, in minutes

0 – 150 150 – 250 250 – 350 350+



Map: The Conversation/CC-BY-ND • Source: Citizens Utility Board • Created with Datawrapper

Credit: The Conversation

Southeast Michigan seemed like the perfect "climate haven."

"My family has owned my home since the '60s. ... Even when my dad was a kid and lived there, no floods, no floods, no floods, no floods. Until [2021]," one southeast Michigan resident told us. That June, a storm dumped more than [6 inches of rain](#) on the region, overloading stormwater systems and flooding homes.

That sense of living through unexpected and unprecedented disasters resonates with more Americans each year, we have found in our research into the [past, present and future of risk and resilience](#).

An analysis of federal disaster declarations for weather-related events puts more data behind the fears—the average number of disaster declarations has skyrocketed since 2000 to [nearly twice](#) that of the preceding 20-year period.

As people question how livable the world will be [in a warming future](#), a narrative around [climate migration](#) and "[climate havens](#)" has emerged.

These "[climate havens](#)" are areas touted by [researchers](#), [public officials](#) and [city planners](#) as natural refuges from extreme climate conditions. Some [climate havens are already welcoming](#) people escaping the effects of climate change elsewhere. Many have [affordable housing](#) and [legacy infrastructure](#) from their larger populations before the mid-20th century, when [people began to leave](#) as industries disappeared.

But they aren't disaster-proof—or necessarily ready for the changing climate.

Six climate havens

Some of the [most cited "havens" in research](#) by [national organizations](#) and in [news media](#) are older cities in the Great Lakes region, upper Midwest and Northeast. They include Ann Arbor, [Michigan](#); Duluth, [Minnesota](#); Minneapolis; Buffalo, [New York](#); Burlington, [Vermont](#); and Madison, [Wisconsin](#).

Yet each of [these cities](#) will likely have to contend with some of the [greatest temperature increases](#) in the country in the coming years. Warmer air also has a higher capacity to hold [water vapor](#), causing more frequent, intense and longer duration storms.

These cities are already feeling the impacts of climate change. In 2023 alone, "haven" regions in [Wisconsin](#), [Vermont](#) and [Michigan](#) suffered significant damage from [powerful storms](#) and flooding.

The previous winter was also catastrophic: Lake-effect snow fueled by moisture from the still-open water of Lake Erie dumped over 4 feet of snow on [Buffalo](#), leaving nearly [50 people dead](#) and thousands of households without power or heat. [Duluth](#) reached near-record snowfall and faced significant flooding as [unseasonably high temperatures](#) caused rapid snowmelt in April.

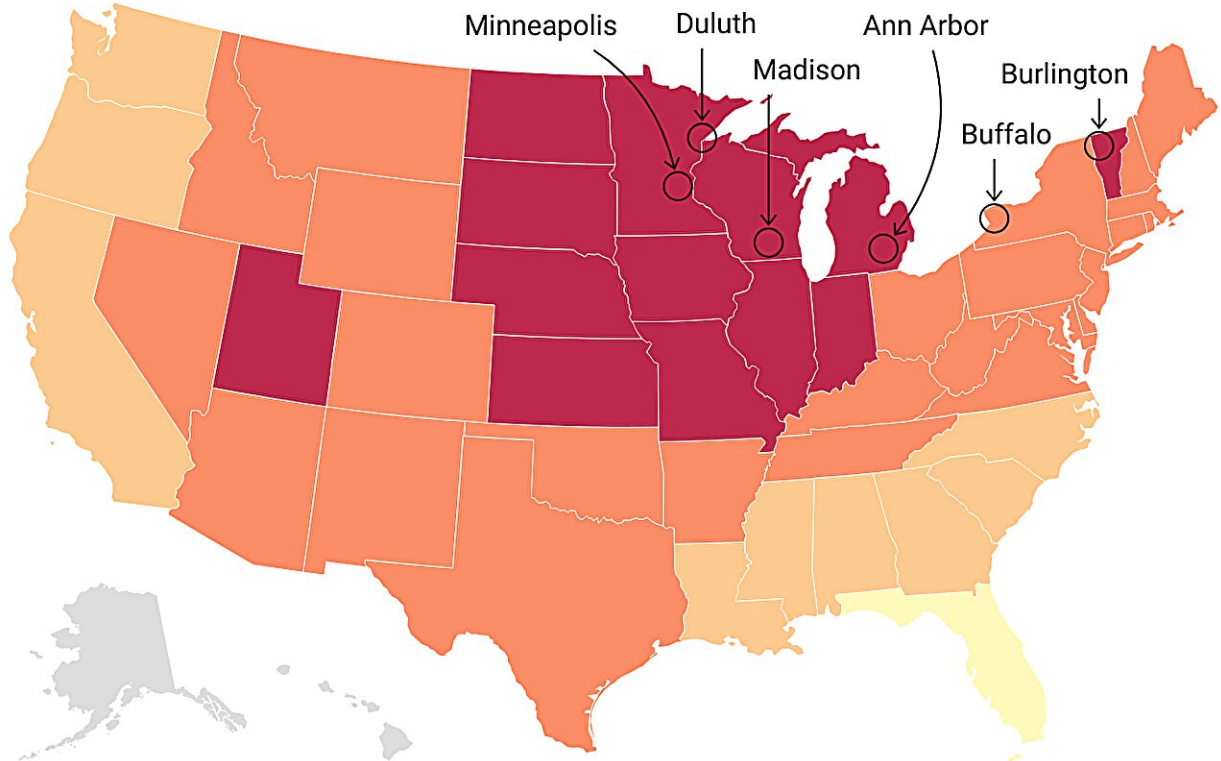
Heavy rainfall and extreme [winter storms](#) can cause widespread damage to the [energy grid](#) and significant flooding, and heighten the risk of [waterborne disease outbreaks](#). These effects are particularly notable in [legacy Great Lakes cities](#) with [aging energy](#) and [water infrastructure](#).

Where temperatures are rising fastest

These six "climate havens" are in states with some of the highest projected average annual temperature rises between 1986-2005 and mid-century. Based on medium-high emissions.

Temperature change in degrees Fahrenheit

2° – 2.75°
 2.75° – 3.5°
 3.5° – 4.25°
 4.25° – 5°



Map: The Conversation/CC-BY-ND • Source: Climate Impact Lab • Created with Datawrapper

Credit: The Conversation

Older infrastructure wasn't built for this

Older cities tend to have older infrastructure that likely wasn't built to withstand more extreme weather events. They are now scrambling to [shore up](#) their systems.

Many cities are investing in infrastructure upgrades, but [these upgrades tend to be fragmented](#), are [not permanent fixes](#) and often lack long-term funding. Typically, they also [are not broad enough](#) to protect entire cities from the effects of climate change and can [exacerbate existing vulnerabilities](#).

Electricity grids are extremely vulnerable to the mounting effects of severe thunderstorms and winter storms on [power lines](#). Vermont and Michigan are ranked 45th and 46th among the states, respectively, in [electricity reliability](#), which incorporates the frequency of outages and the time it takes utilities to restore power.

Stormwater systems in the Great Lakes region also [regularly fail to keep pace](#) with the heavy rainfall and rapid snowmelt [caused by climate change](#). Stormwater systems are routinely designed in accordance with precipitation analyses from the National Oceanic and Atmospheric Administration called [Atlas 14](#), which [don't account for climate change](#). A [new version](#) won't be available until 2026 at the earliest.

At the confluence of these infrastructure challenges is [more frequent](#) and [extensive](#) urban [flooding](#) in and around haven cities. An analysis by the [First Street Foundation](#), which incorporates future climate projections into precipitation modeling, reveals that five of these six haven cities face moderate or major flood risk.

Disaster declaration data shows that the counties housing these six cities have experienced an average of six declarations for severe storms and flooding since 2000, about one every 3.9 years, and these are on the rise.

Intensified precipitation can further stress stormwater infrastructure, resulting in [basement flooding](#), [contamination](#) of [drinking water sources](#) in [cities](#) with [legacy sewage systems](#), and [hazardous road](#) and [highway](#) flooding. [Transportation systems](#) are also contending with [hotter](#)

[temperatures](#) and pavement not designed for extreme heat.

As these trends ramp up, cities everywhere will also have to pay attention to [systemic inequalities in vulnerability](#) that often fall along lines of race, wealth and mobility. [Urban heat island effects](#), [energy insecurity](#) and [heightened flood risk](#) are just a few of the issues [intensified by climate change](#) that tend to hit poor residents harder.

What can cities do to prepare?

So, what is a haven city to do in the face of pressing climate changes and population influx?

Decision-makers can hope for the best, but must [plan for the worst](#). That means working to reduce greenhouse gas emissions that are driving climate change, but also [assessing the community's physical infrastructure](#) and [social safety nets](#) for [vulnerabilities that become more likely](#) in a warming climate.

Collaborating across sectors is also essential. For example, a community may rely on the same [water resources](#) for energy, drinking water and recreation. Climate change can affect all three. [Working across sectors](#) and including community input in [planning for climate change](#) can help highlight concerns early.

There are a number of innovative ways that cities can fund infrastructure projects, such as [public-private partnerships](#) and green banks that help support sustainability projects. [DC Green Bank](#) in Washington, D.C., for example, works with private companies to mobilize funding for natural stormwater management projects and energy efficiency.

Cities will have to remain vigilant about reducing emissions that contribute to climate change, and at the same time prepare for the

climate risks creeping toward even the "climate havens" of the globe.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

Citation: Looking for a US 'climate haven' away from heat and disaster risks? Good luck finding one (2023, August 24) retrieved 28 April 2024 from <https://phys.org/news/2023-08-climate-haven-disaster-good-luck.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.