

INFRASTRUCTURE

OVERVIEW

Increasing temperatures and extreme events, like flooding, are already impacting Vermont's infrastructure, including transportation (roads and rail), buildings, utilities (electricity, water, wastewater, and fuel), and dams, and will continue to do so. Because all Vermonters use the state's built infrastructure in some way (driving on public roads, crossing public bridges, using power and other utilities), damage from climate change is highly visible and impactful to people's daily lives.


12.8%

Of culverts in critical, urgent, or poor condition


75%

Reduction in pavement life span due to climate change


10%

Of electrical substations are in a flood zone


\$200M

Still needed to repair infrastructure from 2023 flooding


300+

Miles of roadway temporarily closed due to 2023 flooding

ROADS, CULVERTS, AND BRIDGES

Outdated, undersized, or under-engineered road and rail stream crossings are vulnerable to severe flood events (Figure 1). Powerful floodwaters can erode material around the pier of a bridge, causing the structure to crumble. Road surfaces are at-risk from intense rains, increasing temperature variability, and extreme heat. Culverts are at risk from more frequent flooding and freeze-thaw cycles. Many existing culverts across Vermont are damaged or not designed to handle extreme flooding; nine municipalities have 25% or more of their culverts listed in poor condition, mostly in mountainous, remote, or financially disadvantaged areas. Following road-stream crossing best management practices and using updated climate-change scenarios in pavement grading can help ensure greater resilience of roads, culverts, and bridges.



Figure 1 Culvert collapse in a road in Brattleboro, Vermont following heavy rain, 2021 Source: Joshua Carnes (2021)

BUILDINGS

At least 10,000 buildings are located within the mapped 100-year floodplain, meaning there is a 1% chance that these buildings will experience flood damage each year. Many of these maps have not been updated to reflect increases in flood frequency and severity in a changing climate, so this number may be an undercount. Older buildings are particularly vulnerable to flooding and weather fluctuations, causing masonry to erode and wood to rot. Vermont has some of the oldest housing stock in the country; an estimated 29% of homes in Vermont were built in 1939 or earlier (Figure 2). Weatherization assistance programs can help homeowners increase both the energy efficiency and climate-resilience of their homes.

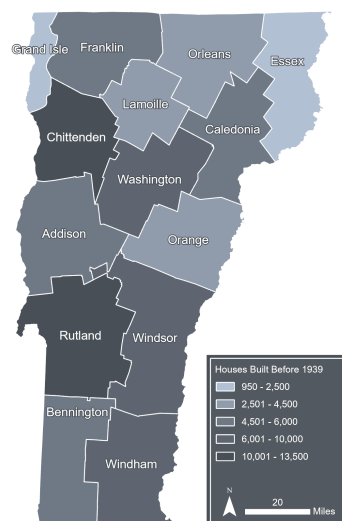


Figure 2 Number of homes built in 1939 or earlier by county

Source: Vermont Housing Finance Agency (2023)

UTILITIES

Frequent flood events, ice storms, and high winds increasingly endanger the power grid, as well as drinking water, wastewater, and fuel infrastructure. Twenty-three wastewater treatment plants were damaged by flooding in 2023. Of Vermont's 334 electric substations, at least 34 (or 10.2%) are in a flood zone. Wooden power poles are more likely to decay under climate change due to more intense precipitation, warmer temperatures, and flooding. Older poles are more at risk of failure. On average, utility poles in the northeast region of the state are older, while poles in Chittenden, Addison, and Orange counties have been installed more recently (Figure 3). Moving utility lines underground or using more durable materials can help increase resilience to climate change.

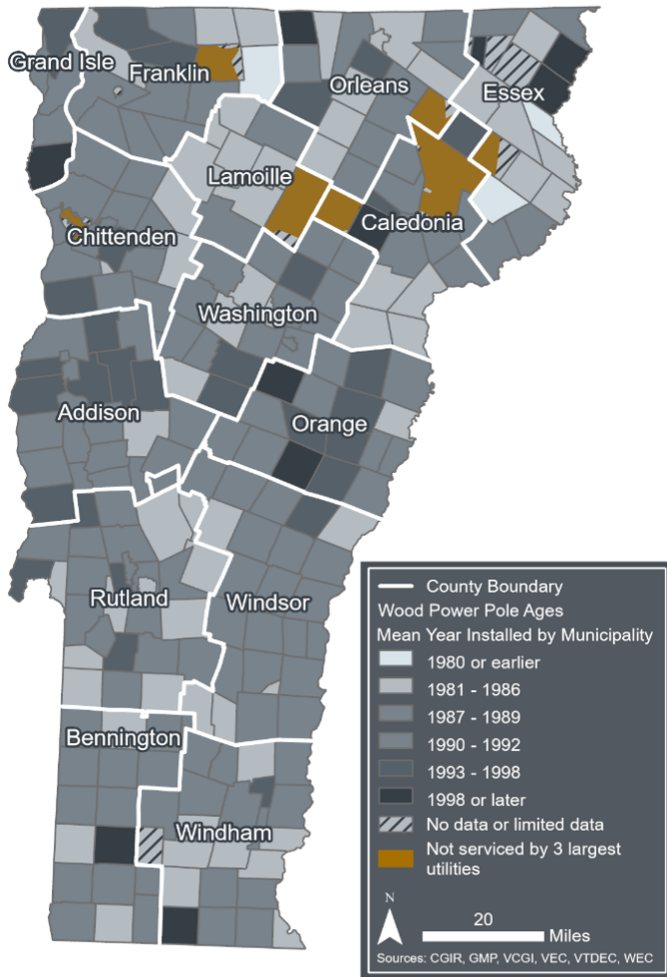


Figure 3 Mean age of wood power poles, aggregated to municipality for Vermont's three largest utility providers: GMP, VEC and WEC, areas shaded with yellow are serviced by one of Vermont's 14 other utility providers

Sources: Green Mountain Power (2022), VCGI (2025), Vermont Department of Public Service (2020), Vermont Electric Cooperative, (2020)

DAMS

Dam overtopping risk in Vermont has risen with increasing flood intensity. Vermont has over 1,000 known dams, of which 50% are inactive. Five dams failed and 57 others overtopped following 2023 flooding exacerbating the impacts of downstream flooding. As of October 2025, 69 dams were rated as "high hazard", meaning that if they were to fail or overtop, there would be significant danger to human lives (Figure 5). Dam removal reduces risk, but projects are expensive and complicated. Vermont's Flood Safety Act (2024) established new dam regulations and created a fund for dam mitigation projects, but support from municipalities and private owners is needed to achieve flood-mitigating impacts.

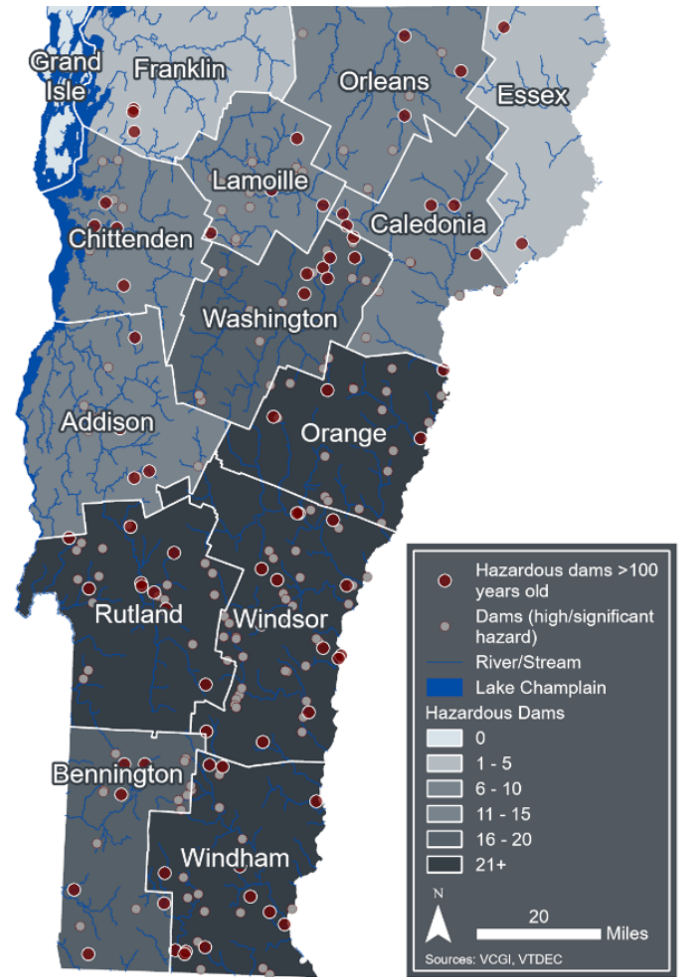


Figure 4 Dams listed as significant or high potential hazard aggregated to the county level, pink circles are hazard dams that are less than 100 years old and red circles are hazard dams that are greater than 100 years old

Sources: USGS (2023), VCGI (2025), VTDEC (2022)