

Vermont Climate Assessment 2025

Chapter 11

Community Development

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11 COMMUNITY DEVELOPMENT

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Recommended citation for chapter

Anjum, R., Ryan, B., Kadri, R., Soares, R., 2026. Chapter 11: Community Development. In Galford, G.L., Balerna, J.A., Turner H.C., Sardonis, A., Peplinski, H. (Eds), The Vermont Climate Assessment 2025. Burlington, Vermont: Climate Measurements Center of Excellence, Gund Institute for Environment at the University of Vermont. DOI: 10.5281/zenodo.20272849. Accessed online at <https://vtclimate.org>.

Author Contributor Roles Taxonomy (CRediT) statement

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Acknowledgements

We thank Lena Greenberg, Joan Haley, Matt Lawless, and Cheryl Morse, whose thoughtful reviews and contributions helped refine and strengthen this chapter. We are grateful for stakeholders Chris Campany, Kevin Chu, Meghan Cope, Johanna de Graffenreid, Stephanie A. Smith, Emma Spett, and Amanda Weinstein, whose insights and expertise added indispensable elements to the chapter. We thank J.A. Balerna for contributing Figure 11-2, and H.C. Turner for contributing Figures 11-1, 11-16, 11-17, 11-18, and 11-21. This chapter is only possible thanks to the vital feedback and support from the Vermont Climate Assessment team: G.L. Galford, J.A. Balerna, H. Peplinski, H.C. Turner, and L. Chen as well as community members of the University of Vermont and the Gund Institute for Environment.

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11.0 EXECUTIVE SUMMARY

Effects of climate change in Vermont, such as extreme heat, drought, and flooding, have adverse impacts on individual and community well-being. Severe flooding in July 2023, termed “the Great Vermont Flood,” followed by severe flooding one year later in July 2024, caused extensive damages with preliminary estimates by the state exceeding one billion dollars for both events. These impacts induced displacements within Vermont and damaged thousands of homes and businesses. Once considered a climate haven, these flooding events reveal that climate vulnerability and risks persist across the state. Some Vermonters are disproportionately vulnerable to climate impacts, particularly those who are unhoused, live below the poverty line, have a disability or chronic health condition, or live in manufactured housing communities.

Communities are well positioned to decrease vulnerabilities that stem from both environmental (e.g., climate change, flood-prone land use) and socioeconomic (e.g., housing affordability) stressors through the following actions:

- Integrative planning among municipalities, regional planning commissions, and state agencies that prioritizes flood mitigation and adaptation.
- Expansion of communication networks and improvement of early warning systems for at-risk populations.
- Support for community-led organizations, mutual aid groups, and long-term recovery groups to improve disaster response, recovery, and mitigation, especially considering reductions in resources from the Federal Emergency Management Agency (FEMA).
- Expansion of inter-state resources, development of pooled and shared resources between communities, and a focus on green infrastructure and nature-based solutions will benefit communities in the immediate and long term.
- Protection of local businesses through programs like the Business Emergency Gap Assistance Program (BEGAP) to provide emergency funding and help more quickly revive local economies and communities following disaster events, like floods.
- Leverage state-led initiatives—whose main objectives are water quality improvements or biodiversity loss prevention—to simultaneously improve climate resilience in communities.
- Expansion of public transit and compact development to offer pathways to reduce greenhouse gas emissions, and nurture more socially cohesive communities that are quintessential to Vermont’s identity.

Community development is a cross-cutting issue that is addressed in many chapters in this assessment. The health and well-being of individuals impact communities’ capacities to

adapt and recover from climate change impacts (see [10 Human Health](#)). Community development is largely limited in planning and growth by the capacity of existing infrastructure, like sewer and septic systems (see [7 Infrastructure](#)). Investments in energy systems like the Municipal Energy Resilience Program that improve heating of homes and businesses through weatherization and efficiencies are central to affordability, as energy cost burdens are extremely high (see [8 Energy](#)). Communities rely on water resources for drinking water and commercial needs (e.g., irrigation) and are impacted by declines in water quality, water supply, and overflowing of rivers during flood events (see [4 Water Resources](#)). Vermont's economy is highly dependent on outdoor recreation and tourism, which indicates a necessity to manage natural, social, and cultural resources that often overlap into the domains of community development (see [9 Outdoor Recreation and Tourism](#)).

For Vermont to be a place of refuge from climate change and have this status lead to locally desired demographic and economic growth, the state needs proactive integrated planning and the development of financial, social, and natural resources that fosters inclusive, safe, and prosperous communities. Governing bodies and agencies should prioritize resources to address the needs of communities that are at higher risk from climate change due to factors like poverty, aging, disability, being unhoused, non-English speakers, and racial minorities.

11.1 KEY MESSAGES

1. Vermont's aging population, rural poor, unhoused residents, manufactured housing communities, and racial and ethnic minorities face the greatest exposure to climate hazards. Marginalized groups have the fewest resources to adapt to climate impacts. Reducing climate vulnerability requires addressing the underlying structural inequalities in housing, income, and healthcare that determine who is most at risk.
2. Early warning systems for climate impacts require improvement. Expanding support to vulnerable populations must be conducted at all stages of the disaster cycle and include building partnerships with community organizations, nonprofits, and local leaders. There is a need to improve the clarity, relevance, and accessibility of disaster communication.
3. Vermont's small-business-dominated economy is heavily concentrated in climate-sensitive sectors including tourism, agriculture, and outdoor recreation. Repeated disasters can strain state and municipal budgets, decreasing fiscal stability. Integrating climate resilience planning into the private and public sectors is essential. Innovative policy measures are needed to finance climate action as well as increasing climate-friendly economic development.

4. Vermont's historic land use patterns have contributed to its climate vulnerability. The concentration of development in floodplains, combined with car-dependent sprawl, exposes communities to intensifying hazards while driving roughly 40% of the state's greenhouse gas emissions. Directing growth to higher ground, restoring natural buffers, and expanding affordable housing in compact communities are essential in creating resilient communities that can function as climate havens.
5. Stakeholders across sectors stressed the need to address climate change more proactively, which requires increasing capacity within government and through community-led efforts (e.g., long-term recovery groups). Vermont's emergency management system is fragmented and under-resourced, and federal disaster support is becoming less reliable. Emergency response relies heavily on part-time municipal officials, and federal disaster assistance. Building durable state and regional capacity, with community-led organizations formally integrated into emergency planning, is critical.
6. Vermont's strong civic networks and community-led organizations are key to improving climate resilience. Strengthening social protection and investing in Vermont's civic infrastructure are essential to building equitable climate resilience. Structural measures are needed to address underlying inequalities. Examples include expanding affordable housing, strengthening worker protections, ensuring universal healthcare access, and building state-level safety net programs.

11.2 BACKGROUND

11.2.1 Community development and climate change

Community development is the ongoing improvement of a group or community by pursuing collective and individual goals centered around human well-being (Shaffer et al., 2004). Goals may involve physical infrastructure, social infrastructure and institutions, economic development, human development, equity, and environmental governance. Human well-being is highly dependent on the ecological systems in and around communities.

Climate change poses a significant and complex challenge to the pursuit of community development, placing mounting pressure on communities and ecosystems—collectively termed socio-ecological systems. This includes slow-onset climate change, such as rising temperatures and changing precipitation patterns, as well as extreme events, like floods and droughts that can develop quickly.

In Vermont, the most notable climate impacts in recent memory have been from severe flooding events, which have occurred repeatedly in the last five years as well as during Tropical Storm Irene in 2011 (see [Water Resources 4.4.1](#)). In July 2023, extreme rainfall,

combined with saturated soils and persistent weather patterns, ultimately resulted in historic flooding throughout the state, which the National Weather Services named the “Great Vermont Flood of 2023.” The physical damages from this flood were estimated at over \$600 million (Vermont Agency of Administration, 2023). This does not capture indirect costs, such as the loss of revenue or wages from the flooding, or longer-term impacts, such as negative health effects or other reductions in quality of life in affected communities (see [Human Health 10.4](#)).

Vermont is at risk from other hazards, like drought, wind, and rising temperatures, which can affect the state’s agriculture sector, water supply, and physical infrastructure. The widespread 2025 drought led to many towns issuing water conservation notices, and people who rely on wells for drinking water saw them go dry (Oliver, 2025; see [Water Resources 4.3.2](#)). Addressing climate change is important from an equity standpoint, as its impacts are unevenly distributed and shaped by class, race, gender, and other socioeconomic factors (see 11.3).

Embedding climate risk in community development is essential. Doing so requires accounting for and protecting against the physical damage caused by climate impacts and integrating climate risk adaptation into institutions, governance, and planning. The inherent uncertainty associated with climate risk renders traditional planning frameworks unable to deal with climate impacts sufficiently. Planning under climate change requires identifying strategies that can cope with a wide range of climate futures.

11.2.2 Overview of Vermont’s communities

Vermont is home to approximately 645,000 people living in 252 cities and towns that are characterized by a combination of natural and working landscapes, concentrated village and urban centers, and dispersed rural households. The population is approximately 90% white and contains one of the highest proportions of seniors (age 55+) in the United States (U.S.). Nearly two-thirds of people live in rural areas, the highest proportion in the U.S. (U.S. Census Bureau, 2024d, 2020). The two most densely populated areas are Chittenden and Rutland counties with 26% and 10% of the population, respectively. Greater Burlington and Rutland City are the most densely populated areas within those counties (Figure 11-1). Population declined in the early to mid-2010s because of net out-migration, particularly of people earning below \$100,000 as they moved out of the state (Campbell & Wexler, 2019). However, following the COVID-19 pandemic there was a sudden spike in in-migration, though the population seems to have stabilized or even shown a mild decline since then (see 11.3.2).

Vermont is known for its forested landscapes, which are primarily naturally regenerated agricultural land that was abandoned following the collapse of the wool industry in the late

19th century. Act 250, the state’s landmark land-use and development law, is widely credited with preserving these forests. Approximately 78% of the state is forested, with over 80% of that land privately-owned and managed. The law was passed in response to pressures from new housing development, particularly due to increasing tourism driven by the ski industry. While it is seen as preserving the scenic beauty of the landscapes, it has come under criticism for restricting development and thus contributing to Vermont’s housing shortage. Along with Act 250, individual town zoning regulations are criticized for exacerbating this shortage. Moreover, towns in Vermont were established along waterways and in floodplains because transportation, industry, and trade required being close to rivers. As climate change is projected to increase the frequency and intensity of flood events (see [Climate Change in Vermont 2.6.2](#)), communities living in these towns are at increased risk of damage to property and loss of life.

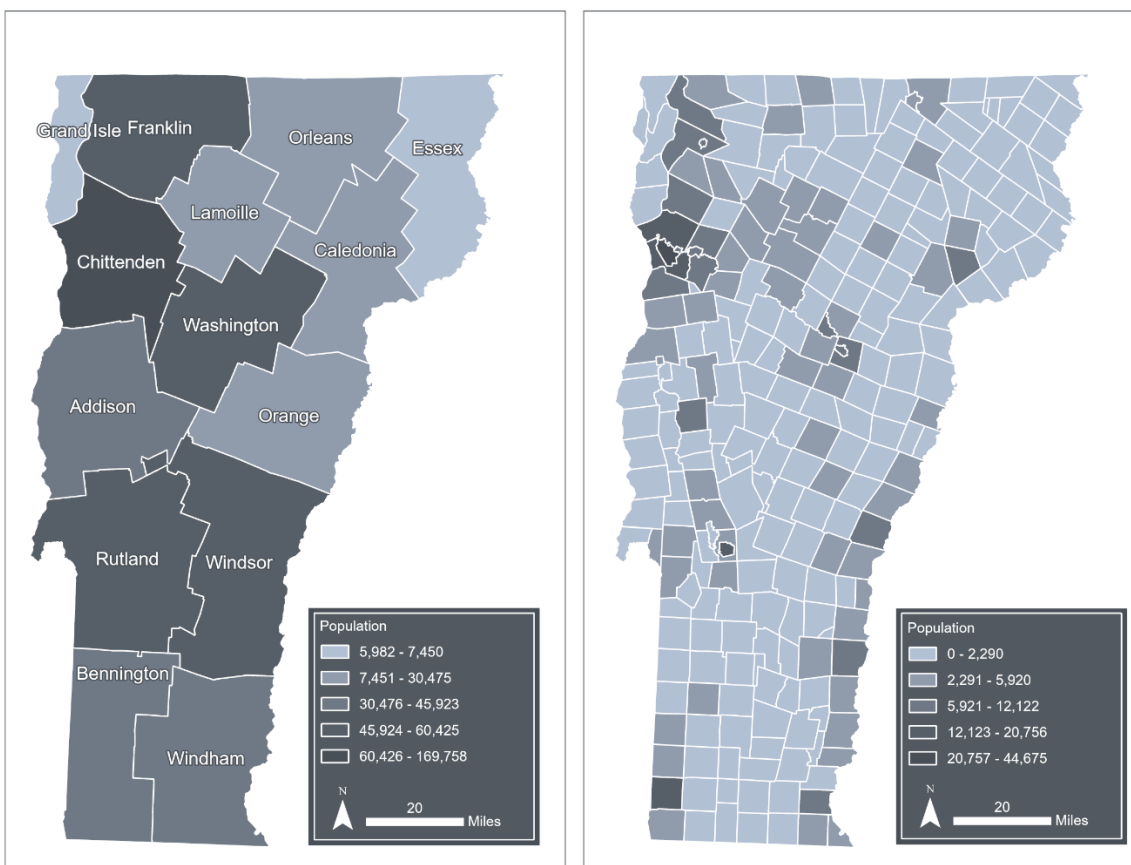


Figure 11-1 Population density by county (left) and population density by town (right) using 2024 American Community Survey (ACS) 5-year estimates

Source: U.S. Census Bureau (2024b)

Note: Visualization by Hannah C. Turner

11.2.3 Vulnerability and resilience

Vulnerability and resilience are two related but distinct concepts that can inform frameworks for community development in the context of climate impacts. Both concepts are concerned with how communities, ecosystems, or social-ecological systems respond to stress and disturbance.

Vulnerability and the factors that shape vulnerability (i.e., exposure, susceptibility, and adaptive capacity) include both structural characteristics—such as age, race, health, income, type of dwelling unit, and employment—as well as “place inequalities,” which can include the level of urbanization, urban design, and economic vitality (Cutter et al., 2003, Figure 11-2). Adaptive capacity encompasses reactive measures (e.g., access to post-disaster aid, transportation, insurance, emergency services) as well as anticipatory actions (e.g., development of institutions, governance structures, knowledge) that can serve pre- and post-disaster needs.

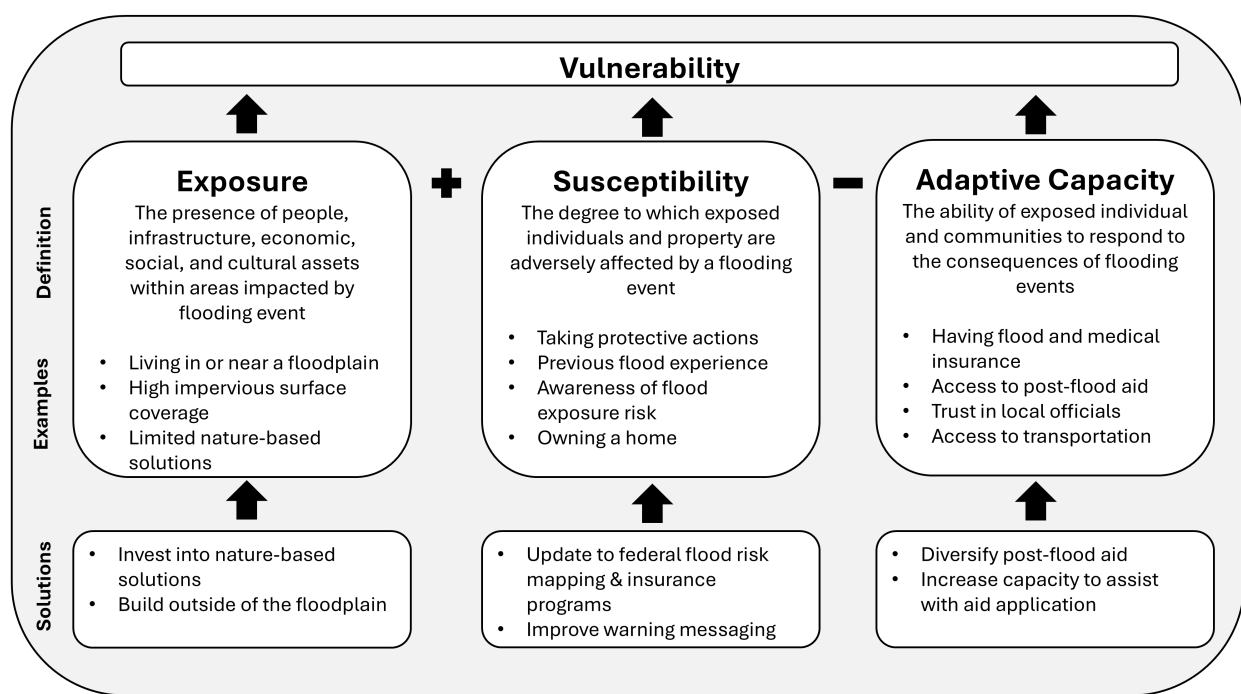


Figure 11-2 Assessing and addressing vulnerability for a flood hazard

Source: Data visualization by authors and Jessica A. Balerna

Climate-resilient communities can absorb or withstand climate disturbances. However, creating climate-resilient communities requires identifying and understanding boundaries (e.g., watersheds, municipalities), tipping points (e.g., repeated flooding events that make homes uninhabitable), threshold effects (e.g., water retention capacity of wetlands/

floodplains) and cascading interactions (e.g., health impacts from a flood event increasing susceptibility to future hazards).

Vulnerability and resilience overlap when assessing a community's adaptive capacity. In vulnerability frameworks, adaptive capacity is the factor that moderates the relationship between exposure and harm. Communities with greater adaptive capacity are less vulnerable even when they are more exposed to a hazard (Figure 11-2). In resilience frameworks, adaptive capacity allows systems to resist, reorganize, or transform when pushed past a threshold or tipping point. Reducing vulnerability and increasing resilience are complementary goals. Vulnerability is more about mapping risk while resilience is concerned with preserving the essential functions of a system. This chapter provides an overview of climate-related vulnerabilities in Vermont's communities and discusses governance, policy, and community action for resilience.

11.3 DEMOGRAPHY

11.3.1 Socioeconomic vulnerability

Physical location, age, income, wealth, race, and housing status are among a range of socioeconomic characteristics that can impact vulnerability to climate change. Nationally, Vermont ranks the second lowest in climate vulnerability because it is less exposed to certain climate impacts (e.g., wildfires) and not exposed to others at all (e.g., sea-level rise). However, some communities are at high risk from certain hazards based on their physical location (U.S. Climate Vulnerability Index, 2026). For example, all Vermont counties—except Orange and Essex—are ranked higher for flooding risk in the Climate Vulnerability Index than the national average. The Index further ranks most Vermont counties as highly vulnerable to extreme temperatures, which places the aging population, unhoused people, and those who work in agriculture or other outdoor jobs at higher risk (see [Human Health 10.3](#)). Moreover, some minority populations can be more vulnerable to certain climate impacts, making their identification critical.

Aging population

A key feature of Vermont's demography is its aging population (Figure 11-3). Vermont has the second highest share of population over the age of 65 of any state (21.4%); the national average is 16.9% (U.S. Census Bureau, 2024a). From 2020–2024, the share of the population between the ages of 65–79 (15%) and above the age of 80 (14%) has increased in the state (U.S. Census Bureau, 2024b). At the same time, the working age population increased only modestly (1.2%), and the young adult population increased by about 7% percent (Table 11-1).

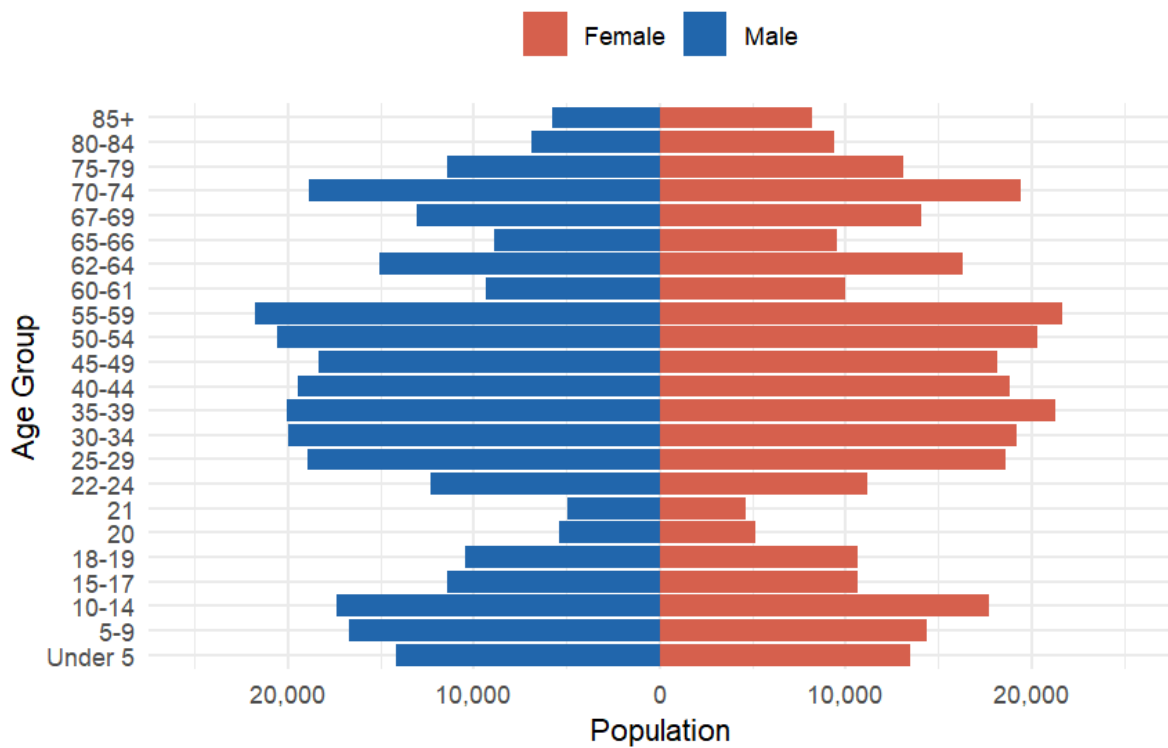
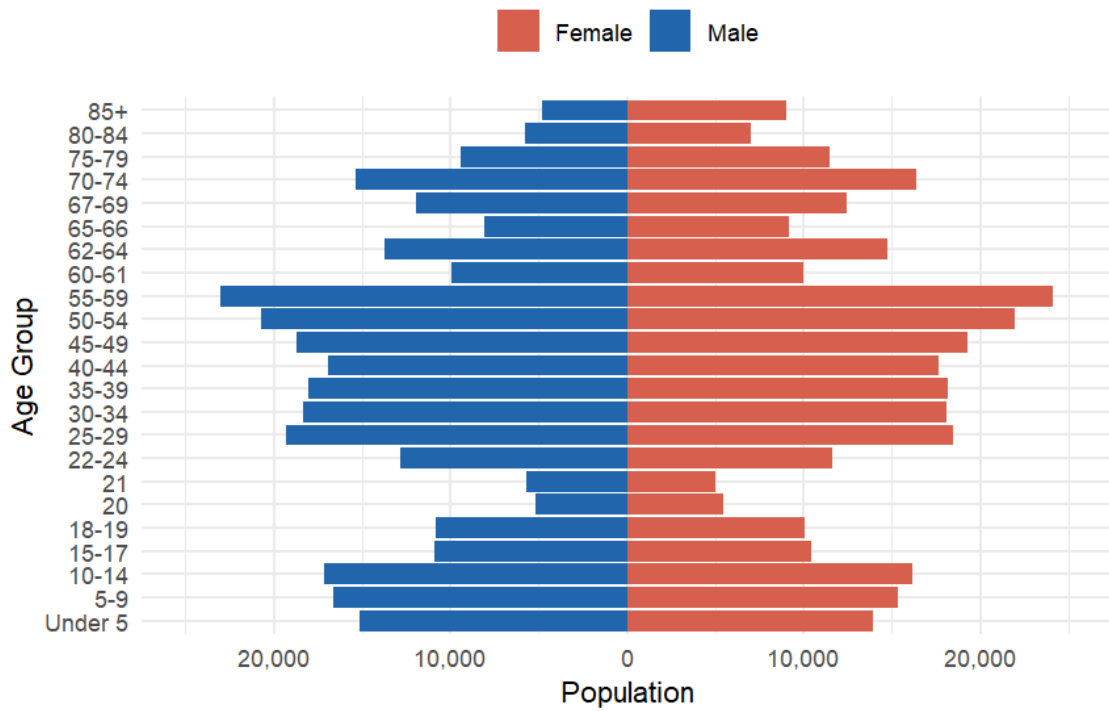


Figure 11-3 Vermont population pyramids for 2020 (top) and 2024 (bottom)

Source: U.S. Census Bureau (2024b)

Table 11-1 Vermont population by age group in 2020 and 2024

Age group	2020	2024	Percentage change
0-17	115,632	115,986	+0.3%
18-24	66,619	64,692	-2.9%
25-39	110,439	118,031	+6.9%
40-54	115,180	115,651	+0.4%
55-64	95,598	94,067	-1.6%
65-79	94,275	108,433	+15.0%
80+	26,597	30,246	+13.7%
Total	624,340	647,106	+4.5%

Source: U.S. Census Bureau (2024b)

Older adults are more likely to experience serious health impacts from increasing incidences of heatwaves, wildfires, and vector-borne illnesses (see [Human Health 10.2](#)). They are more likely to face challenges with mobility and require assistance with daily activities. Just over half (51%) of Vermonters over the age of 80 live alone (Vermont Agency of Human Services & Department of Health, 2025). This social isolation can add difficulty in case of evacuation due to a climate-related extreme event (e.g., flood, wildfire). These vulnerabilities can be improved with measures that increase social cohesion (i.e., feelings of trust, support, and belonging among communities) as well as inclusive planning (see 11.6.5). The large proportion of older adults also creates a structural vulnerability that adds stress to existing systems; for example, a higher rate of emergency department visits could occur during a heatwave compared to a population that has a higher share of younger adults (see [Human Health 10.3](#)). This puts pressure on health systems' capacity to deal with the increased demand and can lead to negative outcomes for patients beyond those seeking care due to heat impacts.

Children and adolescents form a vulnerable population in terms of health and face similar risks to the older adults including those from heat stress, asthma, allergies, and vector-borne illnesses as well as mental well-being (Otto et al., 2017; see [Human Health Table 10-1](#)). Climate-related extreme events can also cause disruptions in education when schools shut down. Children in poverty are at greater risk from climate impacts, compounded by a 200% increase in the number of children experiencing houselessness since 2020 (Lantieri et al., 2024).

Racial and ethnic minorities

While racial minorities make up only 9% of Vermont's population, race and ethnicity can shape susceptibility to climate risk. Census tracts in the state with high racial diversity and limited English proficiency residents are also associated with vulnerability to higher heat (Ren et al., 2023). Studies in other states and nationwide show that mortality risk from rising

temperatures is higher among Black, Hispanic/Latino/a, and Native American adults compared to white adults as well as among non-U.S. citizens compared to citizens (Berberian et al., 2022). Heat-related incidence of cardiovascular events, acute kidney injury, and asthma is also higher in black individuals compared to non-black individuals (Berberian et al., 2022). Lower incomes and poverty rates are a contributing factor that increases underlying risks in these populations. Further, farms in Vermont are reliant on Latino/a people for labor, increasing their risk of heat-related health issues as they work outdoors.

Black, Hispanic/Latino/a, and Native American populations in Vermont are more likely to experience houselessness, increasing their exposure to climate impacts (Lantieri et al., 2024); they are overrepresented in the houseless population compared to their share in the overall population of Vermont (Table 11-2), particularly for Black people.

Table 11-2 Houseless population compared to overall population by race in 2022

Race/ Ethnicity	Vermont population	Percent of total population	Houseless population	Percent houseless population
Asian	10,824	1.7%	36	1.0%
Black	8,000	1.2%	266	7.7%
Hispanic/Latino/a	13,793	2.1%	154	4.5%
Native American	1,336	0.2%	83	2.4%
Two or more races	25,809	3.9%	69	2.0%
White	594,131	90.9%	2,835	82.3%
Total	653,893		3,443	

Source: Lantieri et al. (2024)

Income and poverty

Low-income households and individuals are often disproportionately impacted by extreme events across the world, including within the U.S. (Avtar et al., 2023; Dang et al., 2026; Winsemius et al., 2018). People with low incomes are likely to be concentrated in areas physically at-risk from extreme weather, have homes less resistant to extreme weather, or be experiencing houselessness. With limited resources, they are less likely to be able to respond to a climate event and recover from it. Extreme events can increase future rates of poverty and exacerbate income inequality (Avtar et al., 2023; Hallegatte & Rozenberg, 2017). Repeated shocks can push people who are slightly above the threshold down into poverty.

In Vermont, the share of households below the federal poverty level is approximately 9%, substantially below the national rate of 12% (Public Assets Institute, 2025). The proportion of non-white households in poverty is much higher with Black, Native American, and Pacific Islanders being the highest (22%, 19%, and 18.5%, respectively). The federal poverty level

can underestimate income-based vulnerability as the cost of living in Vermont is relatively high (Vermont Joint Fiscal Office, 2025). The Vermont Basic Needs Budget for a single person was about \$50,000 in urban areas and \$45,000 in rural areas (Vermont Joint Fiscal Office, 2025). About one-third of Vermont households earn less than \$50,000 (Figure 11-4). Younger and older people are overrepresented in the groups that are making below \$25,000 and between \$26,000–\$50,000. The northeast and southern areas of the state have relatively higher rates of poverty than the rest of the state (Figure 11-5).

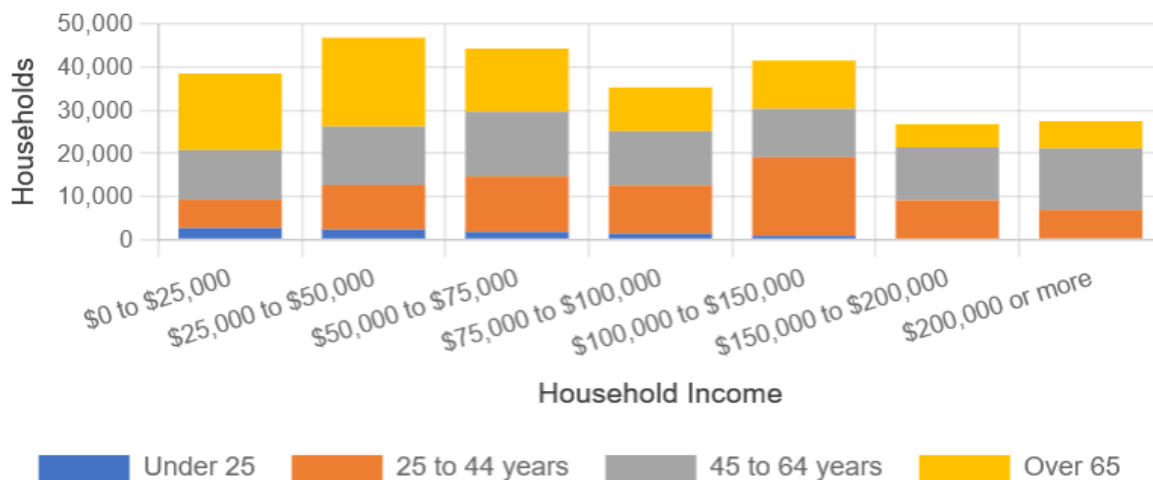


Figure 11-4 Household income distribution in Vermont in 2023

Source: U.S. Census Bureau (2023)

Note: Households can be of any size from one household member and higher

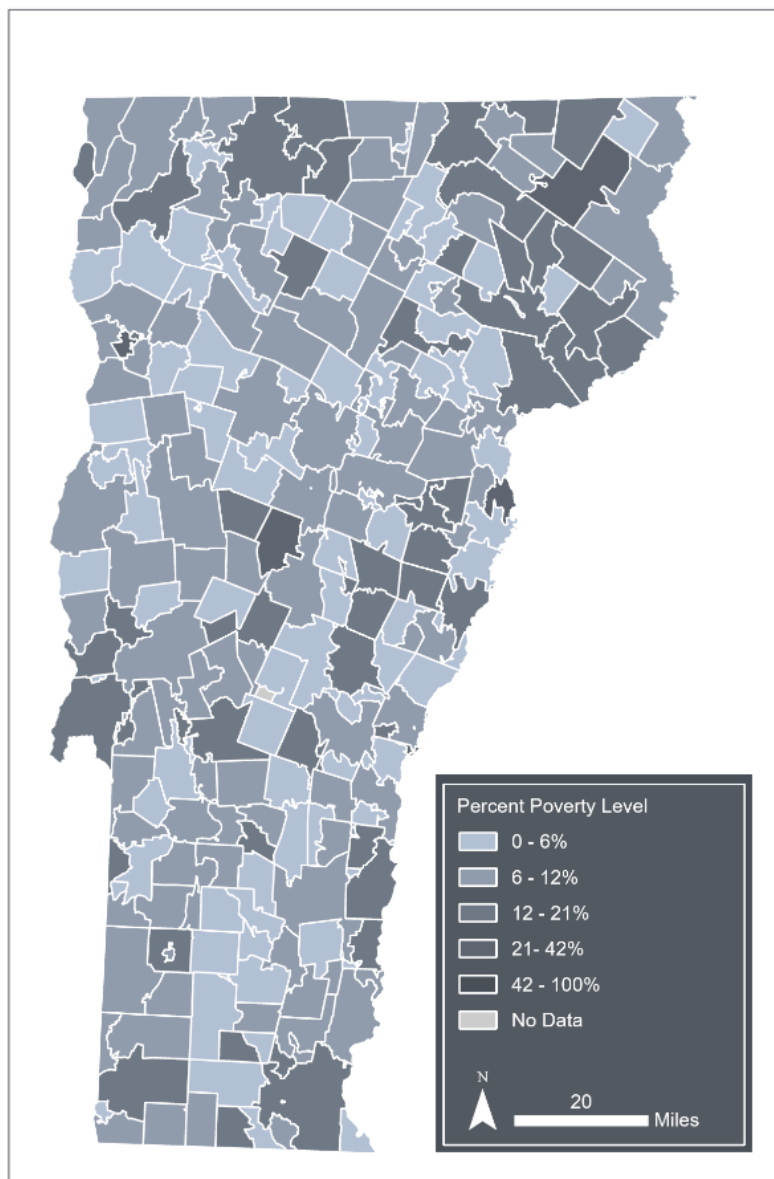


Figure 11-5 Percentage of people living in poverty by Vermont zip code (2024)

Source: U.S. Census Bureau (2024b)

Note: Data visualization by Hannah C. Turner

Housing

Housing and shelter are inextricably connected to climate vulnerability. Based on reports to the statewide help line called 211, the floods of July 2023 and July 2024 damaged at least 7,924 homes (roughly 2.3% of residential properties), adversely impacting thousands of households and individuals (Lantieri et al., 2024). This number is likely an undercount, as July 2023 reports (5,026) were significantly higher than July 2024 (2,898). While these numbers are reflective of the events themselves—July 2023 impacted a larger area of the

state—many residents were impacted in both years and potentially failed to report damage the second time if they felt their needs were not met in July 2023. Across all counties impacted by the floods of July 2023 and July 2024, the majority of 211 reports for residential property damage were owned rather rented (Table 11-3).

Table 11-3 Residential properties by county that reported whether they owned or rented their property when reporting damage during the July 2023 and July 2024 flood events

County	July 2023		July 2024	
	Own	Rent	Own	Rent
Addison	520	22	173	6
Bennington	94	6	1	0
Caledonia	263	15	803	59
Chittenden	208	10	514	7
Essex	8	1	109	5
Franklin	46	2	7	1
Grand Isle	4	0	1	0
Lamoille	268	135	97	3
Orange	366	30	26	3
Orleans	361	25	179	2
Rutland	143	17	4	0
Washington	1,452	230	828	63
Windham	188	3	2	0
Windsor	518	22	4	0
All counties	4,439	518	2,748	149

Source: Vermont Emergency Management (2023a)

Climate risk in manufactured housing communities

Manufactured housing communities, also known as mobile home parks, are a vital source of affordable housing in Vermont, serving over 7,000 households. These communities are disproportionately vulnerable to extreme weather events as they are often located within floodplains and house residents who are more susceptible to impacts and less able to respond or adapt. Populations in vulnerable housing situations, such as manufactured homes, are the most severely impacted by disasters (Baker et al., 2014; Tate et al., 2021; see [Human Health 10.4.1](#)).

For example, during Tropical Storm Irene (2011), mobile homes accounted for 15% of the homes damaged—with over 150 homes destroyed in park communities—despite comprising only 7% of Vermont's housing stock (Hamshaw & Baker, 2024). A third of all mobile home parks have some land in floodplains (Hamshaw & Baker, 2024), and 12–40% of the homes are in a “Special Flood Hazard Area” as designated by FEMA. Many manufactured housing communities were built before modern land-use regulations, so they

were allowed to be sited in hazardous locations like floodplains, where land is typically cheaper than in other areas. The construction materials and layout make them more susceptible to storm damage from wind and water. Flood waters can move manufactured homes off their concrete slab.

During the July 2023 flooding event, 65 mobile homes were severely damaged or destroyed (Vermont Disaster Recovery, 2025). To assist homeowners, the state of Vermont created the Condemned Mobile Home Assistance Program, which provides support and funding to ensure any mobile homeowners impacted by flooding received the equivalent of the maximum FEMA assistance payment to be used to rehab, relocate, or sell their damaged homes (Vermont Disaster Recovery, 2025). A 2025 flood anniversary report (Vermont Disaster Recovery, 2025) notes,

The floods of 2023 and 2024 put a spotlight on both the challenges mobile home communities face and the opportunity they present. As a direct result, the State has made mobile home repair and improvement an important part of its strategy to increase the availability and affordability of quality housing in Vermont.

This strategy includes the creation of the Mobile Home Infill Program (MHIP), which improves vacant lots and installs affordable manufactured homes for purchase (Vermont State Housing Authority, 2026).

The residents of manufactured housing communities are more likely to have characteristics that increase their vulnerability to climate change impacts. Residents who own their homes typically lease the land and have a median income significantly lower than the state average. The median income for a manufactured housing community resident is \$30,000 compared to the statewide median household income of \$49,500. Lower incomes combined with lower access to resources can reduce preparedness and increase vulnerability to hazards. Residents are also characterized by a higher percentage of older adults, who may have pre-existing health or mobility concerns that can impede moving out of harm's way.

Emergency managers can take proactive steps to address these risks, such as identification of manufactured housing communities, hazard mapping, developing long-term partnerships with community residents and trusted organizations, and creating emergency plans. During response and recovery, officials should recognize the unique needs of manufactured housing community residents, who are neither conventional homeowners nor renters. For long-term resilience, emergency managers should advocate for resources to reduce social vulnerability, align with programs like weatherization, educate hazard mitigation planners, and consider strategic buyouts for the most at-risk parks, while always prioritizing resident input.

Unhoused populations

The population of 3,386 unhoused people in Vermont as of July 2025 are extremely vulnerable to climate change effects and hazards (Housing & Homelessness Alliance of Vermont et al., 2025). Climate change disproportionately impacts unhoused people due to exposure to the elements (e.g., heat stress) and extreme weather events (e.g., flooding), as well as social-economic marginalization (Bezgrebelna et al., 2021). Intensive precipitation events (e.g., hail or rain) pose great risk to unhoused populations, as their belongings and shelters (e.g., tents) are vulnerable to damage (Ramos, 2025; Vermont Emergency Management, 2023b).

In Vermont, Black and Native Americans are 8% and 2% of the unhoused population, while 1% and 0.2% of the total population, respectively (Table 11-2). This disproportion may be due to income disparities and structural barriers accessing secure and stable housing (rental and ownership) by people of color (Lantieri et al., 2024). Vermont's home and rental vacancy rates are both well below the national average, putting upward pressure on the price of housing. The rental vacancy rate for Vermont has remained below 4% since 2020, well below the historical average (Figure 11-6). Low vacancy rates also contribute to the 200% increase in unhoused populations between 2020–2025 (Housing & Homelessness Alliance of Vermont et al., 2025; Lantieri et al., 2024).

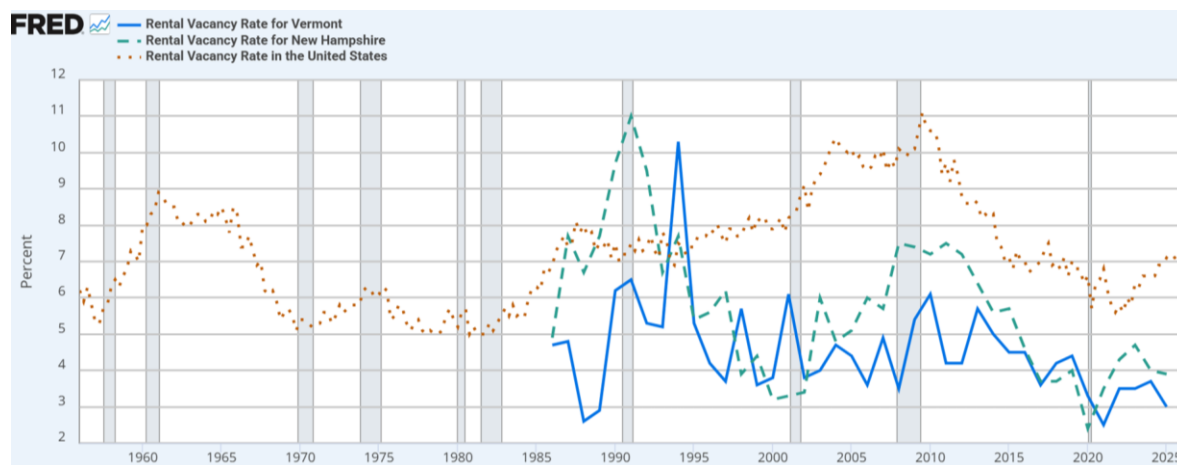


Figure 11-6 Rental vacancy rates for the U.S. (red dots), Vermont (blue solid), and New Hampshire (green dashes) over time. Shaded areas indicate U.S. recessions.

Source: Federal Reserve Bank of St. Louis (FRED, 2025)

People who are unhoused are often neither considered nor prioritized in climate adaptation planning, which increases their susceptibility and exposure to climate change impacts (Eisenhardt et al., 2024). To mitigate the impacts of extreme weather events on unhoused populations, communities should use tools like adaptive crisis management that provide

inclusive shelter accommodations, shared warming and cooling spaces, employ coordinated, targeted communication strategies, and expand resources that enable these initiatives to continue (Trudeau et al., 2025). Investing in public infrastructure and planning for built/natural environments to be climate-resilient and inclusive are powerful ways to reduce climate impacts (Cronley et al., 2024). Access to safe, affordable and stable housing is the primary mechanism to reduce risk to climate impacts. Cronley et al. (2024) recommend initiatives that increase access to shade, public water, mixed-use daytime shelter, and the installation of storage lockers to increase capacity to maintain supplies and gear necessary for enduring extreme temperature and precipitation events (Cronley et al., 2024). Ultimately, increasing the availability of affordable housing is required statewide (Vermont Emergency Management, 2023b). Act 250 review requirements have been viewed as a barrier to building affordable housing, including manufactured homes. Some reform of Act 250 to enable more compact housing development in town and village centers could provide a path for affordable housing while maintaining protections for land conservation.

11.3.2 Human mobility, migration, and displacement

Climate change interacts with people's ability to migrate or move out of harm's way. Human movement can be abrupt and unplanned or deliberate and planned, and the capacity to move varies considerably across individuals and communities. These dynamics can be conceptualized through the interaction between vulnerability and mobility (Figure 11-7). Both the characteristics of individuals and populations—such as health status, socioeconomic status, and social networks—and the characteristics of the places people live—including biophysical, built, political-legal, and economic conditions—are important in determining vulnerability and mobility. Four categories emerge from these overlapping dimensions: 1) migration as adaptation (voluntary mobility due to low vulnerability but high mobility); 2) adaptation in place (voluntary immobility due to low vulnerability and low mobility); 3) displacement (involuntary mobility due to high vulnerability and high mobility); and 4) trapped populations (involuntary immobility due to high vulnerability and low mobility).

Attributing cause and effect for migration is complex, however, climate change can be a strong cause of migration due to impacts that alter economies, livelihoods, and undercut social capacities (Clark et al., 2025; International Organization for Migration, 2024). The International Organization for Migration (Sironi & Emmanuel, 2019) defines climate migration as:

The movement of a person or groups of persons who, predominantly for reasons of sudden or progressive change in the environment due to climate change, are

obliged to leave their habitual place of residence, or choose to do so, either temporarily or permanently, within a State or across an international border.

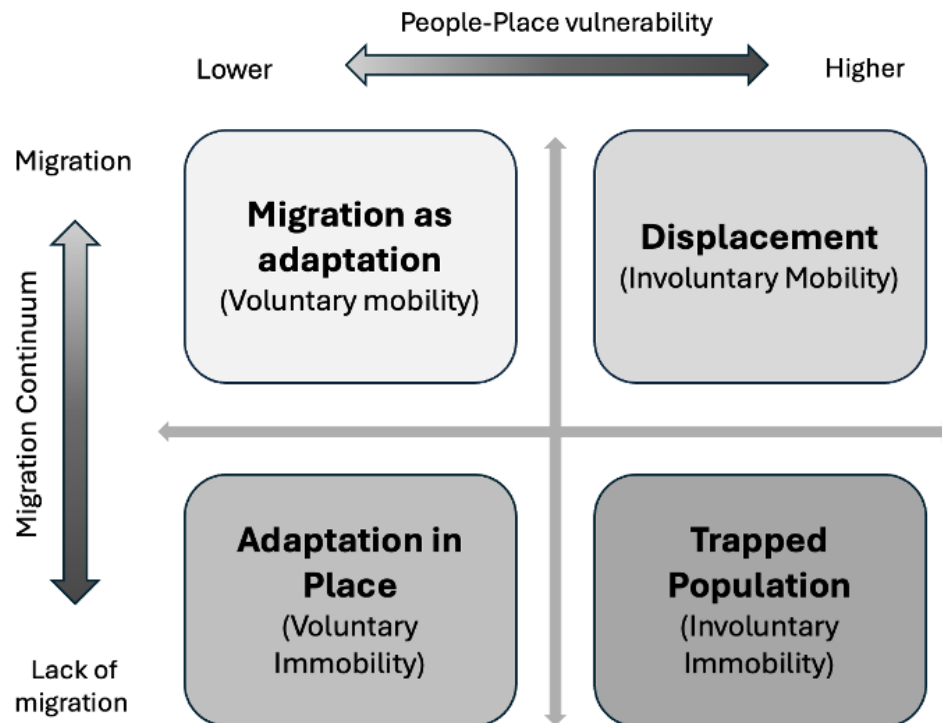


Figure 11-7 The interaction between climate vulnerability and migration

Source: Adapted from Hunter et al. (2021)

Climate change can erode livelihoods through the depreciation of environmental services (e.g., reduction in rainfall leading to lower crop yields), and therefore drive migration within regions (Feng et al., 2010; Silva Rodríguez De San Miguel et al., 2021). The distance of human movements is subject to a variety of geographic, economic, social, and political factors at the local, regional, and international scales (International Organization for Migration, 2024). Projections of future movements suggest that there may be substantial migration of people from countries with low gross domestic products (GDPs) emigrating to higher GDP countries in northern latitudes (Yang et al., 2025), though there is not universal consensus due to the innate complexity of vulnerability and uncertainty of human behavior (Benveniste et al., 2025) and the opposite may also be true within the U.S., that households in higher income brackets are more mobile particularly in response to a disaster (Clark et al., 2025).

In the U.S., internal movements and displacement of people due to natural disasters (largely intensive storms) has reached unprecedented levels; between 2015–2024, displacement due to disasters was on average seven times higher than displacements due to conflict or

violence (Figure 11-8). In 2024, the U.S. experienced the highest number of internal movements of any nation due to natural disasters, with about 11 million people impacted (2025 Global Report on Internal Displacement (GRID), 2025). Within the U.S., people are generally moving away from areas experiencing extreme weather events and natural hazards (e.g., hurricanes, wildfires) related to climate change but migration is largely related to household income, suggesting households in lower income brackets are less able to migrate as a climate response (Clark et al., 2022a, 2025).

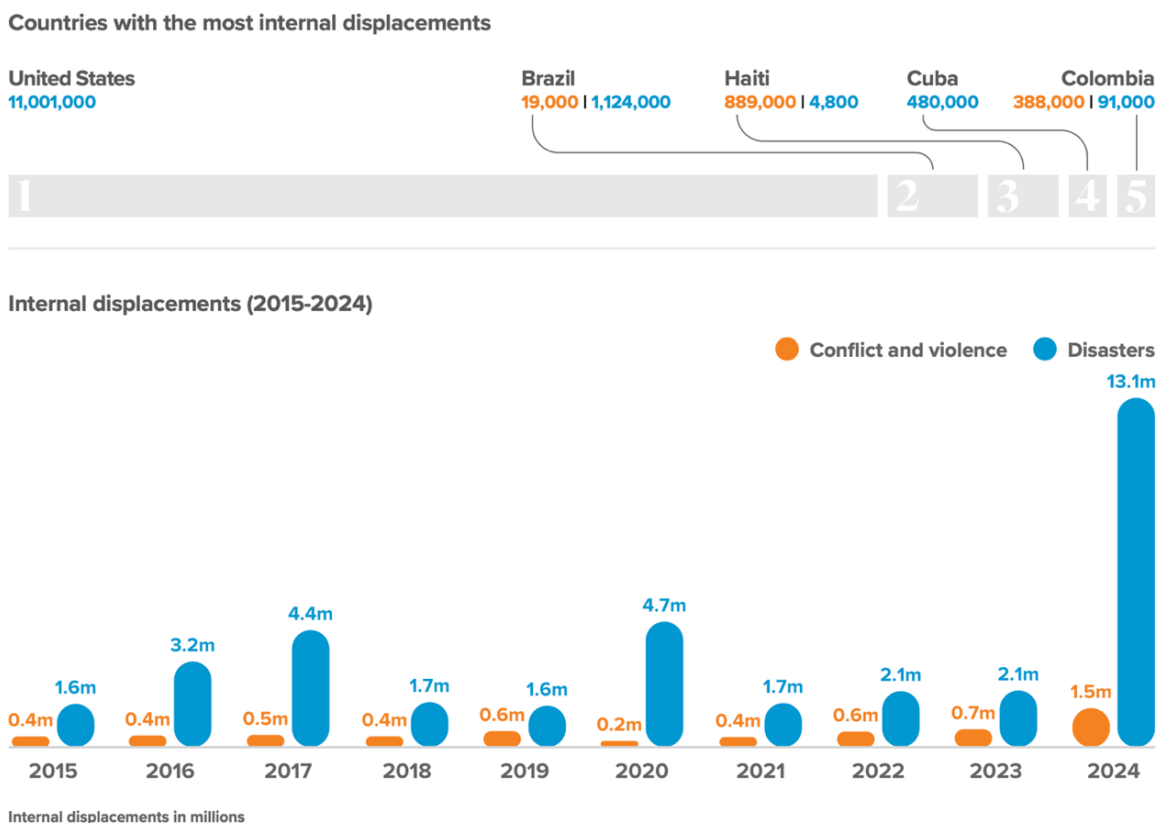


Figure 11-8 Countries in the Americas with the most internal displacements in 2024 (top) and (bottom) internal displacement (millions) in the Americas caused by natural disasters (in blue) and conflict (in orange) between 2015-2024

Source: Global Report on Internal Displacement (GRID, 2025)

Note: Numbers of IDPs are the total as of the end of 2024. Internal displacements are the total number for all of 2024. All data is for the Americas

Climate-induced displacement in Vermont

Accurately quantifying short-term displacement is challenging because it is difficult to account for people who may take refuge with community members rather than in places sponsored by governmental or non-governmental entities. During and after the July 2023 flood event in Vermont, the mosaic of housing assistance and emergency shelters included

a FEMA Mass Care sheltering program as well as American Red Cross operated shelters in Barre, Johnson and Rutland counties. The initial need for shelter spiked around July 12, 2023, with almost 250 people sheltering at FEMA Mass Care. Need for shelter then declined rapidly and plateaued at around 50 people until July 22, 2023 (Kroll & Blondin, 2025; Figure 11-9). At least 314 households reported needing short-term shelter (Fountain & Duffort, 2023) following the July 2023 flooding event, even though far more households (estimated at 4,000 homes) were impacted (Fountain & Duffort, 2023).

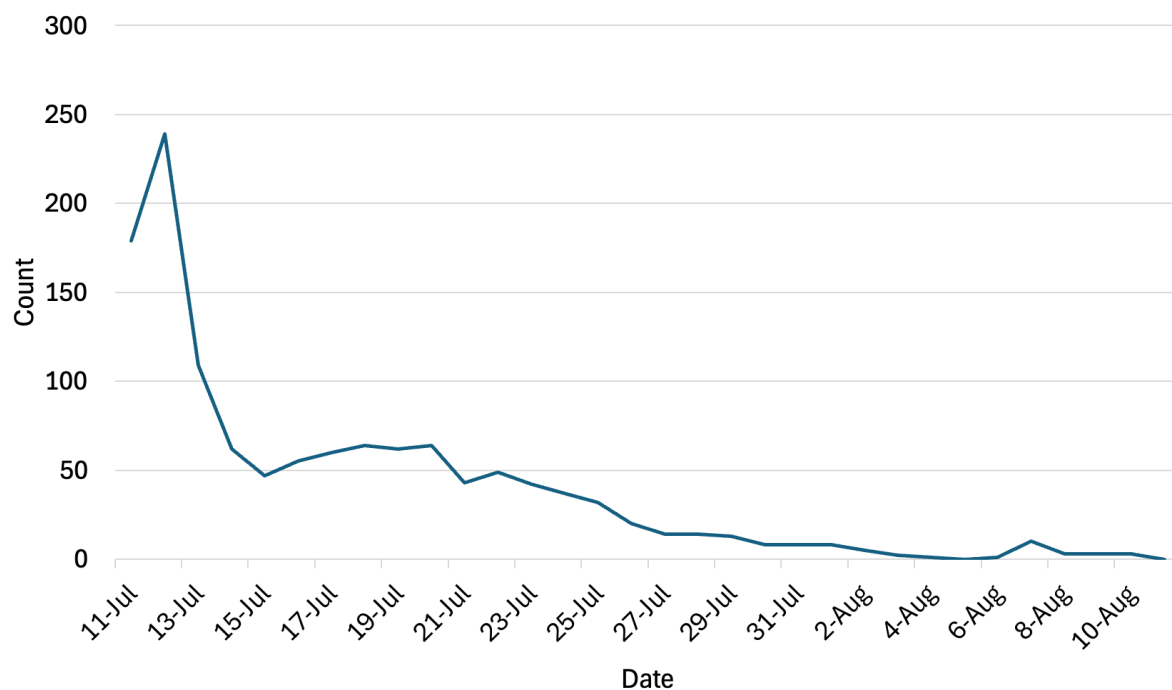


Figure 11-9 Number of people taking shelter at FEMA Mass Care between July 11 and August 10, 2023

Source: Kroll & Blondin (2025)

Based on those that reported to Vermont 211 (Vermont Emergency Management, 2023a), there was clear need for shelter in the aftermath of the major flooding events of both July 2023 and July 2024 (Figure 11-10). In 2023, 329 people reported needing immediate shelter, mostly from Washington and Lamoille counties (157 and 79 individuals, respectively). In 2024, 84 people reported to 211 that they were in need of immediate shelter (Figure 11-10), with Caledonia and Washington counties most impacted (33 and 23 individuals reporting a need for immediate shelter in those two respective counties). In 2023, 6% of calls to Vermont 211 were for shelter, while in 2024 the average was 2.8%. This trend may indicate that short-term displacement was less extensive in 2024 or that fewer people relied on Vermont 211 in 2024.

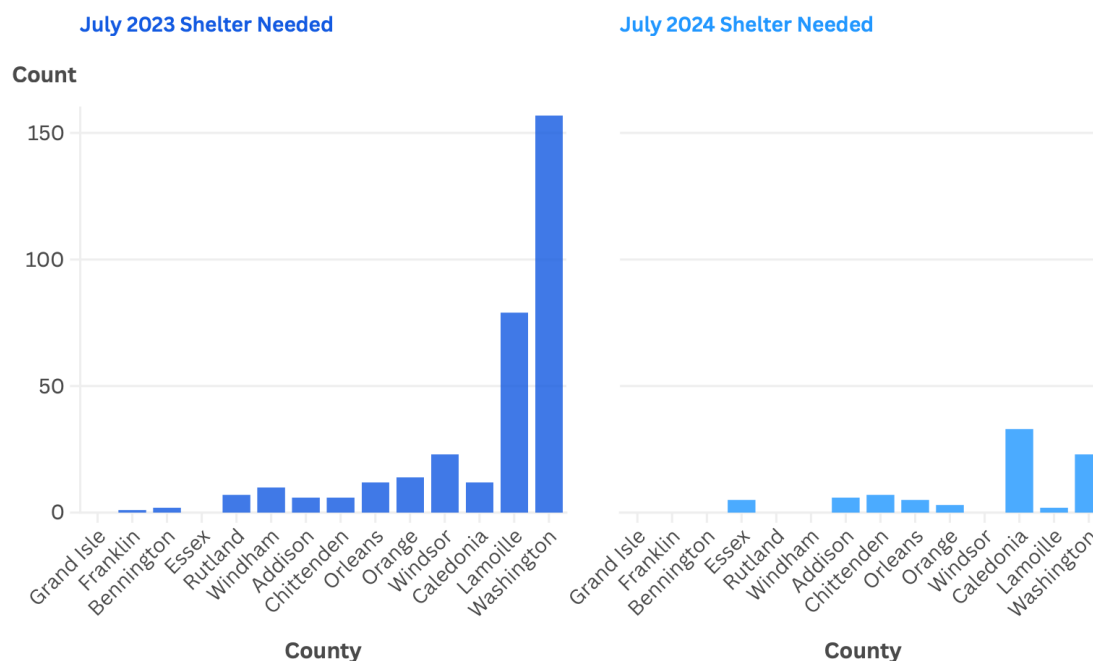


Figure 11-10 Need for shelter by county based on Vermont 211 reports

Source: Vermont Emergency Management (2023a)

Vermont 211 reports of uninhabitable homes are another indicator of potential displacement. Individuals that stated their home was uninhabitable did not always state that they needed shelter (i.e., they had another housing option, whether that be family, friends, etc.) Washington and Lamoille counties had the highest number of reports of an uninhabitable home in July 2023 with 364 and 183, respectively (Table 11-4). High reports of uninhabitable homes also came from the counties of Windsor (75), Caledonia (36), and Orange (31). After the July 2024 floods, the counties with the most reports of uninhabitable homes were Caledonia (93), Washington County (68), and Chittenden County (29).

FEMA Rental Assistance also indicates some degree of displacement due to flood impacts. In 2023, 1,234 owners and 383 renters applied for rental assistance (Kroll & Blondin, 2025). The most impacted and distressed area (Caledonia, Lamoille, Orleans, Rutland Washington, Windham and Windsor counties) totaled 1,122 owners and 358 renters with a sum of \$3,840,182 in rental assistance dispersed. The 2023 flood displaced 0.19% of the total population of Vermont and required substantial resources to support short-term relocation to safe places (Kroll & Blondin, 2025)

Table 11-4 Residential properties by county with Vermont 211 reports of uninhabitable homes after the July 2023 and July 2024 flood events

County	July 2023	July 2024	All events
Addison	25	11	36
Bennington	6	0	6
Caledonia	36	93	129
Chittenden	15	29	44
Essex	2	8	10
Franklin	1	0	1
Grand Isle	0	0	0
Lamoille	183	8	191
Orange	31	4	35
Orleans	20	13	33
Rutland	16	1	17
Washington	364	68	432
Windham	17	0	17
Windsor	75	0	75
All counties	791	235	1,026

Source: Vermont Emergency Management (2023a)

After the July 2023 flooding, most counties had similar FEMA Rental Assistance payouts for both renters and owners of damaged properties (Figure 11-11). Windsor and Windham counties paid disproportionately higher payments for renters than owners, differing by 38% and 18%, respectively. Reasons for higher payments include housing availability, household composition, and differing requirements for housing (e.g., family size).

■ Average Owner Payment ■ Average Renter Payment

Rental Assistance (\$)

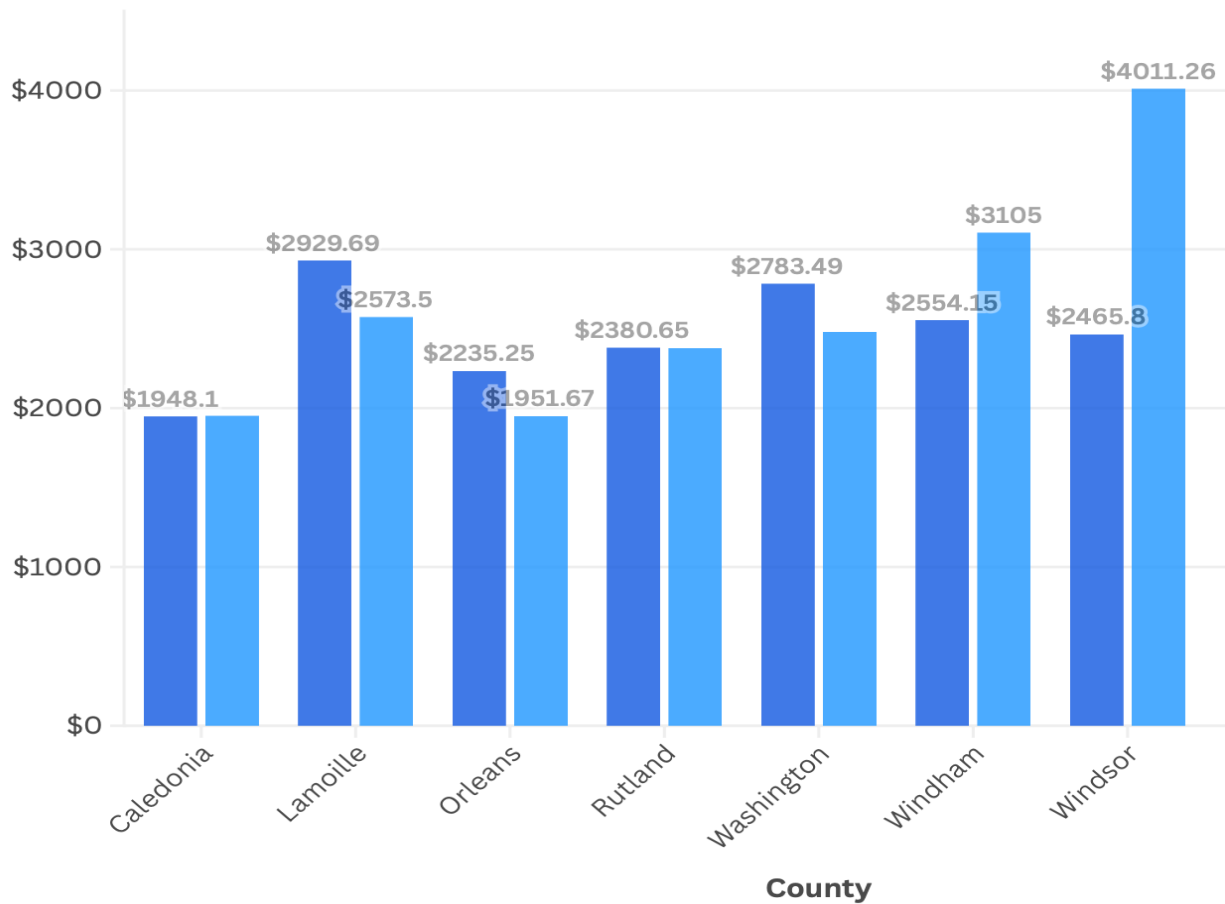


Figure 11-11 FEMA rental assistance average for owners and renters after July 2023 flooding

Source: Kroll & Blondin (2025)

Planned movements and migration in Vermont

Planned movement differs from displacement in its voluntariness (Figure 11-7). Moving out of harm's way—voluntarily or involuntarily—is a common way to reduce physical harm against both sudden and slow onset climate hazards. For migration to be adaptative (as opposed to coping or maladaptive), voluntary conditions are necessary. Migration away from vulnerable areas and communities has cascading impacts on both local and regional economies and communities (Marandi & Main, 2021).

Climate hazards outside of Vermont are projected to intensify within the U.S. and globally. It is not known to what degree climate-related sudden events or slow processes will lead to population movements away from coastal areas impacted by sea-level rise and wildfire-prone areas and into Vermont (International Organization for Migration, 2024). These movements into Vermont from outside (in-migration) may be considered adaptation to climate change. There are at least three interacting communities to consider in terms of human migration under climate change: 1) the community of migrants themselves; 2) the community of origin; and 3) the community of destination (Gemenne & Blocher, 2017). A determining factor that is largely unknown is how adaptation (or maladaptation) will be manifested in each of these populations over time (Khavarian-Garmsir et al., 2026).

Concerns about Vermont being able to accommodate a large influx of people as a “climate haven” (Bergman, 2023; D’Auria, 2025) relate to the capacity for communities to sustain their existing populations while receiving migrants due to constraints in infrastructure (e.g., housing stock and wastewater management), geography (e.g., flood vulnerability), and socioeconomics (e.g., affordability and social inclusion).

There is little evidence of overwhelming climate migration into Vermont in present and future projections; however, this is not the complete story (Table 11-5). There are currently no clear trends in migration across international borders (e.g., due to aridification reducing crop yields) or movement within the U.S. (e.g., due to heatwaves or socioeconomic factors like amenities; Clark et al., 2022; Feng et al., 2010; Hoffmann et al., 2024; Mazzoleni et al., 2026). It is clear that there is great potential for human movement out of harm’s way in pursuit of short-term safety and long-term relocation, whether adaptive or not (International Organization for Migration, 2024).

Climate impacts on changes in populations in Vermont can be direct (e.g., displacement and out-migration due to riverine flooding) and indirect (e.g., voluntary in-migration due to sea-level rise outside the state). Projections for amplifications and displacement by 2100 by county (Table 11-5) estimate that Chittenden, Bennington, and Windsor counties will have no population change or have increases of up to 10,000 individuals by 2100 due to amplification (i.e., where fertility rates and aging populations are included at the destination based on the assumption that migrants are often younger) and displacement (Hauer et al., 2024). All other counties are projected to either have no population change or losses of up to 10,000 individuals by 2100 (Hauer et al., 2024). Compounding impacts of climate change like riverine flooding impacting livelihoods and/or poverty are not included in these projections. Due to these uncertainties, projections should be considered conservative (Table 11-5).

A different study projects a population increase of 0–1% in Chittenden and Lamoille counties by 2053 due to climate change-induced sea level rise (Shu et al., 2023; Table 11-5). Bennington Essex, Rutland, Windham, and Windsor counties are projected to have population decreases of –3% to –1%. Grand Isle, Franklin, Orange, Caledonia, Orleans, Addison and Washington are projected to have population declines of 0% to –1% by 2053 (Shu et al., 2023).

Table 11-5 Projected changes in population for 2053 and 2100 under climate change induced sea level rise (SSP2-RCP4.5)

County	Amplification due to Population for 2100 under SSP2-RCP4.5	Displacement due to Population for 2100 under SSP2-RCP4.5	Projected population change under SSP2-RCP4.5 for 2053
Addison	0 to –10,000	0 to –10,000	–1% to 0%
Bennington	0 to +10,000	0 to +10,000	–3% to –1%
Caledonia	0 to –10,000	0 to –10,000	–1% to 0%
Chittenden	0 to +10,000	0 to +10,000	0% to 1%
Essex	0 to –10,000	0 to –10,000	–3% to –1%
Franklin	0 to –10,000	0 to –10,000	–1% to 0%
Grand Isle	0 to –10,000	0 to –10,000	–1% to 0%
Lamoille	0 to –10,000	0 to –10,000	0% to 1%
Orange	0 to –10,000	0 to –10,000	–1% to 0%
Orleans	0 to –10,000	0 to –10,000	–1% to 0%
Orleans	0 to –10,000	0 to –10,000	–1% to 0%
Rutland	0 to –10,000	0 to –10,000	–3% to –1%
Washington	0 to –10,000	0 to –10,000	–1% to 0%
Windham	0 to –10,000	0 to –10,000	–3% to –1%

Source: Amplification and displacement for 2100 under SSP2-RCP4.5 (Hauer et al., 2024); project population under SSP2-RCP4.5 for 2053 (Shu et al., 2023)

Migration is fundamental to human existence, as we live and depend on ever-changing ecological systems. Social, economic, and political systems determine vulnerability in terms of mobility and exposure (Figure 11-7). The interactions between the community of origin, those migrating and the community of destination will determine not only the vulnerability of communities to climate change impacts, but collective socioeconomic and environmental well-being. Whether it be internal or international migration, xenophobia threatens the opportunities for climate-induced migration to foster demographic growth and racial and cultural diversification in Vermont, thus limiting local economic revitalization and regional adaptation to climate change. (A Northeast Safe & Thriving for All (NEST), 2023). Nurturing welcoming and inclusive environments for migrants requires expansion of affordable housing and healthcare, resilient infrastructure, employment opportunities, and social and legal infrastructure.

11.4 ECONOMY

11.4.1 Vermont's economy at a glance

Vermont's economy faces significant and growing risks from climate change. With a GDP of approximately \$36.9 billion (inflation adjusted or chained to 2017 U.S. dollars) in 2025 and a workforce of roughly 251,000 people, the state has limited fiscal capacity to absorb repeated climate shocks (U.S. Bureau of Economic Analysis, 2026c; U.S. Census Bureau, 2022; U.S. Census Bureau of Labor Statistics, 2026). Climate risk can stress economies in two ways: 1) physical risks arise from direct damage to productive assets, disruption of supply chains, reduced labor productivity, declines in agricultural output, and increased public expenditure on disaster response and recovery; 2) transition risks emerge from the structural changes associated with shifting to a low-carbon economy, with implications for energy costs, capital investment, and labor market adjustment. Both types of risks carry macroeconomic consequences, including effects on GDP, household income, wealth distribution, employment, inflation, and public finances.

Vermont has the smallest economy in the U.S.; the state lost about \$3.7 billion during the COVID-19 pandemic but GDP has since bounced back, similarly to the rest of the country (Figure 11-12). Vermont's economy is heavily service-oriented, largely dominated by tourism, professional services (e.g., scientific, technical, administrative services), and healthcare, with some recent growth in the technology sector (Table 11-6). Ninety-five percent of Vermont business are small businesses, and they employ 62% of the population (U.S. Census Bureau, 2022). The University of Vermont and the University of Vermont Medical Center are anchor institutions and reflect the high proportion of employment in healthcare.

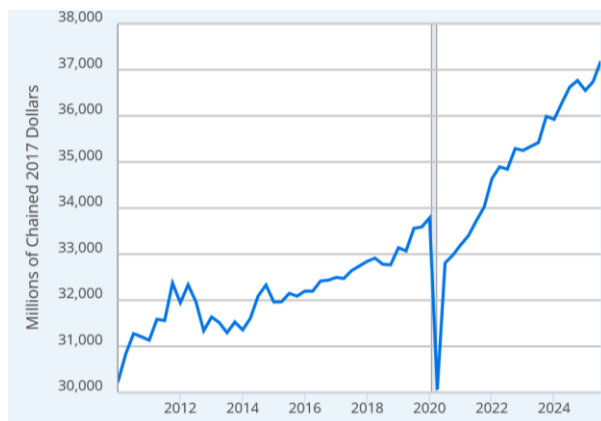


Figure 11-12 Real gross domestic product of Vermont seasonally adjusted and in millions of chained 2017 U.S. dollars

Source: U.S. Bureau of Economic Analysis (2026a)

Table 11-6 Real gross domestic product by sector in Vermont in 2024 in millions of 2017 dollars

Sector	GDP (\$million)
Finance, insurance, real estate, rental, and leasing	6,660.20
Finance and insurance	1,753.70
Real estate and rental and leasing	4,908.40
Professional and business services	5,121.90
Educational services, health care, and social assistance	4,971.80
Healthcare and social assistance	4,150.20
Educational services	825.10
Government and government enterprises	4,792.70
Federal civilian	1,059.30
Military	174.70
State and local	3,557.80
Manufacturing	2,638.00
Food and beverage and tobacco product manufacturing	700.00
Wood product manufacturing	82.20
Retail trade	3,125.20
Arts, entertainment, recreation, accommodation, and food services	2,537.90
Arts, entertainment, and recreation	461.40
Accommodation and food services	2,077.30
Wholesale trade	1,465.40
Construction	1,161.00
Information	1,389.90
Utilities	857.00
Other services (except government and government enterprises)	723.50
Transportation and warehousing	560.20
Agriculture, forestry, fishing and hunting	422.70
Farms	452.00
Forestry, fishing, and related activities	107.90
Mining, quarrying, and oil and gas extraction	186.90
All industry total	36,398.90

Source: U.S. Bureau of Economic Analysis (2026b)

Note: This table follows North American Industry Classification System classifications including sub-industry disaggregation for select relevant sectors. Not all sub-industries are shown so the figures will not add up to the aggregated number. The real estate sector shows a large GDP contribution, but this figure is somewhat misleading, as it includes imputed rents, that is, the methodology assumes that homeowners pay rent to themselves. This is not actual economic activity. Vermont has a high home ownership rate of 74%, so a large share of its real estate GDP is imputed rents (Federal Reserve Bank of St. Louis, 2025).

Retail, trade, accommodation, and food services together account for over a quarter of all employment (26.4%), which largely fall under tourism (Table 11-7). State and local governments also employ a large share of workers (18.4%). Vermont has fewer employees

in higher-wage, higher-productivity sectors (e.g., information, finance and insurance, professional and technical services) relative to national averages, but more employees in health care, education, retail, and accommodation sectors, which is consistent with a rural, aging, tourism-driven state economy that is heavily oriented toward localized services (Table 11-7).

Table 11-7 Employment in select sectors in Vermont and the U.S. in 2024

Sector	Jobs in Vermont	% Jobs in Vermont	National jobs	% National jobs
Public administration	53,259	17.2	22,420,669	14.5
Federal	6,859	2.2	3,001,207	1.9
State	16,127	5.2	4,819,889	3.1
Local	30,273	9.8	14,599,573	9.4
Health care and social assistance	51,343	16.6	22,217,638	14.3
Retail trade	35,820	11.6	15,479,194	10
Accommodation and food services	30,369	9.8	14,092,895	9.1
Manufacturing	27,434	8.9	12,733,350	8.2
Professional, scientific, and technical services	17,851	5.8	10,781,508	7.0
Construction	16,196	5.2	8,135,442	5.2
Administrative and support and waste management and remediation services	13,370	4.3	9,123,838	5.9
Educational services	11,039	3.6	3,204,582	2.1
Other services (except public administration)	8,830	2.9	4,666,503	3.0
Wholesale trade	8,822	2.9	6,106,692	3.9
Finance and insurance	8,429	2.7	6,290,311	4.1
Transportation and warehousing	6,411	2.1	6,562,468	4.2
Arts, entertainment, and recreation	4,914	1.6	2,605,233	1.7
Agriculture, forestry, fishing and hunting	3,601	1.2	1,254,363	0.8
Real estate and rental and leasing	3,008	1.0	2,406,045	1.6
Management of companies and enterprises	2,035	0.7	2,613,063	1.7
Utilities	1,210	0.4	589,311	0.4
Mining, quarrying, and oil and gas extraction	629	0.2	586,238	0.4
Information	0	0.0	2,904,986	1.9
Total employment	309,138		154,990,441	

Source: U.S. Census Bureau of Labor Statistics (2026)

Note: This table follows North American Industry Classification System classifications. Sub-industry disaggregation is included for select relevant sectors

The agriculture, forestry, fishing, and hunting sectors are a relatively small portion (1.3%) of GDP (Table 11-6). However, these sectors provide input for value-added goods and services such as specialty foods—notably maple syrup and cheese—as well as wood manufacturing. These sectors provide the basis for a significant part of the appeal of the tourism and recreation sector (see [Outdoor Recreation & Tourism 9.4](#)) and are critical for food security in Vermont (see [Agriculture & Food Systems 6.4.6](#))

11.4.2 Sectoral vulnerabilities

Tourism

Tourism-oriented sectors are highly susceptible to climate change (see [Outdoor Recreation and Tourism, Figure 9-6](#)). Fall and spring are becoming more variable and unpredictable in length and weather, with direct consequences for visitor volumes and spending patterns (see [Outdoor Recreation and Tourism 9.4](#) and [9.6](#)). Retail businesses and restaurants are concentrated in downtown areas, often situated within floodplains and river corridors due to a legacy of historical river-based development tied to timber shipping. Many businesses in Vermont without a climate preparedness program (see 11.5.5) failed within three years of a flood (Johanna de Graffenreid, pers. comm., October 29, 2025). There is evidence that extreme heat in New England can disrupt downtown traffic, hurting business (Van Leuven & Schaefer, 2025). In the aftermath of the July 2023 and July 2024 floods in Vermont, the Business Emergency Gap Assistance Program (BEGAP) provided emergency matching stopgap assistance to businesses. Securing funding to make this a long-term and reliable program for businesses as well as supporting proactive resilience planning prior to a disaster is a priority of the Vermont Resilience Implementation Strategy (Vermont Agency of Natural Resources & Vermont State Treasurer’s Office, 2025).

Healthcare

Extreme weather exacerbated by climate change will increase health burdens, leading to Vermonters needing to use more health care services (see [Human Health 10.0](#)). Vermont’s healthcare costs are among the highest in the country, as are health insurance premiums (Figure 11-13). An increase in utilization of health care services could contribute to overall rising health care expenses for people, including out-of-pocket costs and insurance premiums. Premiums are expected to rise as a consequence of the cuts to Medicaid and the Affordable Care Act premium tax credit enhancements in the 2025 Budget Reconciliation Act (Center on Budget and Policy Priorities, 2025). These cuts increase the number of people who are uninsured, further increasing communities’ vulnerability (Center on Budget and Policy Priorities, 2025). Blue Cross Blue Shield Vermont, the state’s major insurer, drained its reserves in the last few years, though it seems to have made a recovery in 2025 (Duffort,

2026). Climate change impacts may contribute to higher costs for healthcare in the future, thereby threatening an already fragile system.

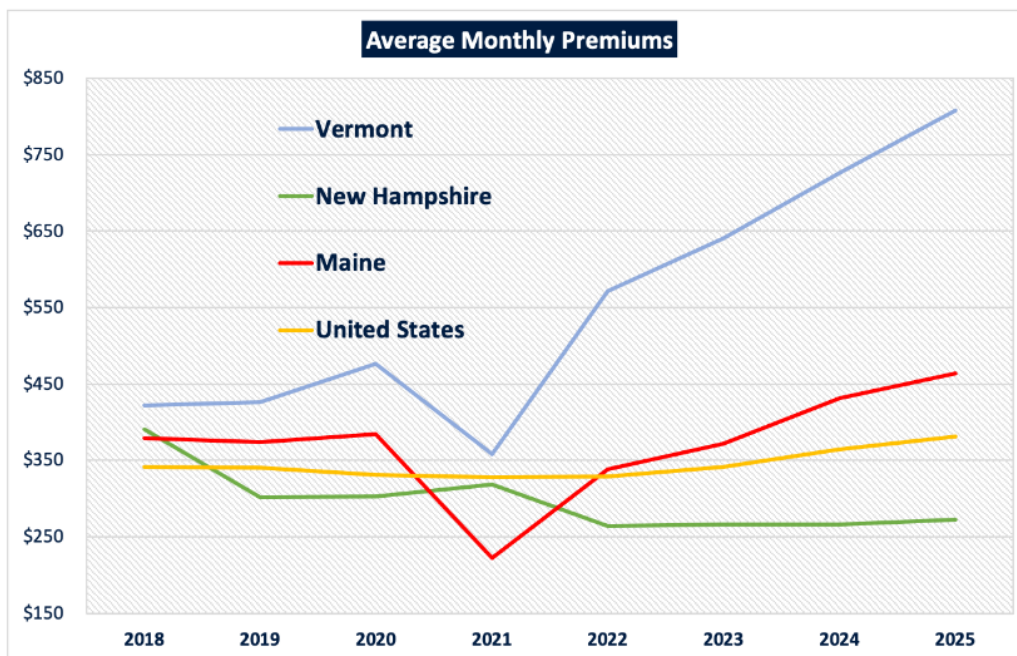


Figure 11-13 Trends in average monthly premiums for Vermont, New Hampshire, Maine, and the U.S. Vermont premiums are higher than all others and have increased substantially since 2021

Source: Vermont Healthcare 911 (2026)

Public sector

The government is likely to experience fiscal instability from having to respond to climate change, especially in combination with other shocks or stressors (e.g., pandemics, shifts in federal government funding priorities). In Vermont, some towns took on debt to complete necessary infrastructure repair following summer floods because the costs exceeded their annual budgets. They were thus reliant on FEMA funds, which have been slow to be disbursed or have been denied in some cases (Giles, 2026; Guber, 2025; see 11.6.6).

Agriculture

Agriculture is vulnerable to climate risk (see [Agriculture and Food Systems 6.4](#)). Some farmland is in floodplains, thereby making farms directly exposed to flooding events that have become more frequent and severe (see [Climate Change in Vermont 2.6.2](#)). The July 2023 floods caused an estimated \$16 million in agricultural damages (Vermont Climate Council, 2025). Longer-term rises in temperature and shifts in precipitation patterns can also impact agricultural yields (see [Agriculture and Food Systems 6.4](#)). Given agriculture's

role as a supplier to value-added food manufacturing and as a foundation for the tourism sector, climate impacts on farming can transmit across multiple parts of the Vermont economy. Moreover, a higher proportion of people are employed in agriculture in Vermont compared to national levels (Table 11-7).

Labor and employment

Climate change affects labor productivity through multiple pathways. Heat stress reduces the physical capacity and cognitive performance of workers, particularly in physically demanding outdoor roles (see [Human Health 10.3.1](#)). Extreme weather events, especially flooding, can prevent workers from reaching their workplaces and disrupt business operations for extended periods (see 11.5.3). These effects fall disproportionately on lower-wage workers in agriculture, construction, and recreation, which are all sectors with the least flexibility to adapt working hours or conditions.

Climate change can also lead to job losses in affected sectors, though research in this area is scarce. In Vermont, unemployment insurance claims increased after the 2023 floods (Public Assets Institute, 2023). One national level study in the U.S. notes an increase in the unemployment rate after a shock that is persistent and becomes more severe over time (Kim et al., 2025). As unemployment increases, it can reduce purchasing power and demand for goods and services, with the potential to slow broader economic activity beyond the sectors initially affected by climate events.

Transition risk

Vermont is comparatively less exposed to transition risk (i.e., structural changes associated with shifting to a low-carbon economy) than most other states. The state has no significant fossil fuel extraction or production assets, meaning it faces little risk of stranded assets or workforce displacement in carbon-intensive industries as the economy shifts toward lower emissions. Vermont's electricity grid is already high in the share of renewable energy, reducing the costs associated with energy transition (see [Energy 8.3.1](#) and [Human Health 10.11.6](#)). However, there are some areas that may be affected by transition risk. Vermont's building stock is older than the national average and heavily reliant on fuel oil and propane for heating. Switching to heat pumps has high upfront costs for homeowners, but it is cheaper in the long run (see [Energy 8.5.2](#) and [Human Health 10.11.4](#)). Similarly, the transportation sector remains heavily dependent on fossil fuels, and the transition to electric vehicles also has upfront costs that may be unevenly distributed across income levels. Further, Vermont has not been able to meet its GHG reduction requirements under the Global Warming Solutions Act (GWSA), leaving the state at risk for lawsuits (Vermont Climate Council, 2025).

11.5 DISASTER MANAGEMENT

Climate change is projected to increase the intensity and frequency of natural hazards in Vermont that require preparedness and response (see [Climate Change in Vermont 2.6](#)). More frequent disasters can undermine individual and collective capacities to respond to future disasters and to slow-onset climate change. Taking proactive actions within each phase of the disaster management cycle, including disaster preparedness, response, recovery, and mitigation can increase community resilience and minimize losses to individuals and communities (Figure 11-14).

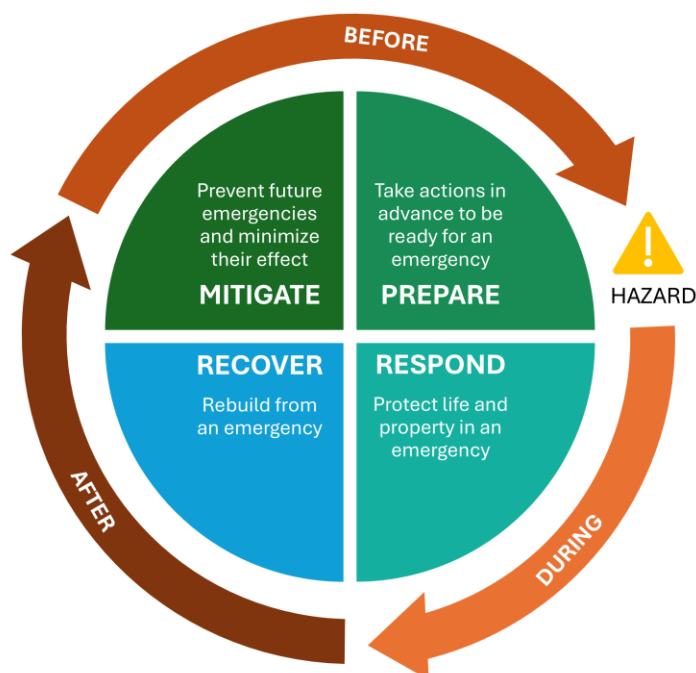


Figure 11-14 Components of the disaster management cycle: preparedness, response, recovery and mitigation

Source: Fairfax County (2019)

Preparedness for a hazard takes place prior to the incident to reduce the adverse impacts on society, economy, and ecosystems. Anticipation of risks and establishing a dialogue about these risks between the public and government leaders is paramount. **Response** to the immediate impacts of natural hazards occurs during the event. Response actions aim to reduce loss to individuals, communities, and society by protecting life, property, and resources. **Recovery** comes after the immediate response to the hazard and is considered a longer-term process of rebuilding and regeneration. The degree and manner to which a system can recover defines its resilience. When a system can return to a state like the original one, or a more desirable state, the system can be characterized as resilient and

adaptive. **Mitigation** of future impacts can occur as part of the recovery stage. Lessening impacts requires the use of resources to bring greater resilience and reduce vulnerability in social, economic, and environmental systems. The following subsection provides an overview of the response to various disasters impacting Vermont from 2020–2025 with particular attention given to the flooding events of July 2023 and July 2024.

11.5.1 Disaster declarations

FEMA disaster declarations—made at the discretion of the sitting U.S. President—authorize federal government assistance in the event of immediate threats and severe damage from natural hazards. While the number of studies in the U.S. is small, existing studies have shown that federal disaster assistance is impacted by politics. FEMA disaster declarations and allocation of funds are influenced by both the president and Congress (Garrett & Sobel, 2003). Factors such as whether the president is running for re-election, whether the disaster is in a swing state, or if the state is otherwise important to the president were all found to be significant (Downton & Pielke, 2001; Garrett & Sobel, 2003; Sabol et al., 2026). The amount of aid given varies widely, from 5% to 200% of estimated damages (Deryugina, 2017). Most recently, the federal administration denied Vermont’s request for a Major Disaster Declaration for floods that occurred in the Northeast Kingdom in 2025, despite estimated damages exceeding the state’s \$1.2 million threshold for disaster declarations (Cotton, 2026).

Vermont has experienced several disasters related to flooding and severe weather that have been authorized for a FEMA declaration (Table 11-8). There are two types of declarations. Emergency Declarations provide aid to supplement states and local governments in providing emergency services. Major Disaster Declarations are declared when the U.S. President deems it beyond the capabilities of states and local governments to respond. These provide wider assistance to both individuals and subnational governments for emergency and permanent work (FEMA, 2025). In the past 5-years, 25% of all disaster declarations were granted for every county in Vermont (EM-3567-VT, EM- 3595-VT, DR-4720-VT, EM-3609-VT). For the other 75% of disasters, most designated counties were in the northern and central portion of Vermont. One event (DR-4621-VT) exclusively impacted southern Vermont.

FEMA declarations trigger several federal mechanisms for response and recovery. Federal assistance for recovery and response comes in programmatic streams that include Individuals and Households Program (IHP), Public Assistance (PA), and National Flood Insurance Programs (NFIP). Mitigation of hazards is supported under the Hazard Mitigation Grant Program (HMGP) and the Building Resilient Infrastructure and Communities (BRIC)

program. HMGP and BRIC have been stymied by legal challenges under changing federal priorities (Angueira, 2025; Raymond, 2025).

Total disbursements from FEMA and the U.S. Department of Housing and Urban Development to Vermont amounted to over \$350 million under these programs from 2021–2025 (Table 11-9). The highest PA (\$200 million) and IHP funding (\$26 million) were in 2023, following the severe flooding event in July of that year (Figure 11-15).

Table 11-8 Federal Emergency Management Agency disaster declarations for Vermont (2020-2025)

Hazard/Disaster	FEMA ID*	Frequency/ Incident Period	Designated Counties
Severe Storms and Flooding	DR-4816-VT	August 22–August 24, 2024	Lamoille
Tropical Storm Depression Debby	EM-3609-VT	August 8–August 10, 2024	All
Severe Storms, Flooding, Landslides, and Mudslides	DR-4826-VT	July 29–July 31, 2024	Caledonia, Essex and Orleans
Severe Storms, Flooding, Landslides, and Mudslides	DR-4810-VT	July 9–July 11, 2024	Addison, Caledonia, Chittenden, Essex, Lamoille, Orange, Orleans, Washington
Severe Winter Storm	DR-4770-VT	January 9–January 13, 2024	Chittenden, Essex, Franklin, Lamoille, and Orleans
Severe Storms and Flooding	DR-4762-VT	December 18–December 19, 2023	Essex, Lamoille, Orange, Orleans, Rutland, Windham, Windsor
Severe Storms and Flooding	DR-4744-VT	August 3–August 5, 2023	Addison
Severe Storms, Flooding, Landslides, and Mudslides	DR-4720-VT	July 7–July 21, 2023	All
Flooding	EM- 3595-VT	July 9–July 17, 2023	All
Severe Storm and Flooding	DR-4695	December 22–December 24, 2022	Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orange, Orleans, Washington
Tropical Storm Henri	EM-3567-VT	August 22–August 29, 2021	All
Severe Storm and Flooding	DR-4621-VT	July 29–July 30, 2021	Bennington and Windham

Source: FEMA (2026a)

Note: *DR signifies Major Disaster Declaration. EM signifies Emergency Declaration

Table 11-9 Total amount granted to Vermont under Federal Emergency Management Agency (FEMA) programs from 2021–2025 (status as of December 18, 2025)

FEMA Program	Definition	Amount	Status
Individuals and Households Program (IHP)	Financial and direct services to eligible individuals and households affected by a disaster who have uninsured or under-insured necessary expenses and serious needs	\$39,927,573	Active
Public Assistance (PA)	Supplemental grants to state, tribal, territorial, and local governments and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies	\$258,036,974	Active
Hazard Mitigation Grant Program (HMGP)	Funding to state, local, tribal and territorial governments to develop hazard mitigation plans and rebuild in ways that reduce or mitigate future disaster losses in their communities	N/A	No presidential approvals granted as of December 11, 2025
Building Resilient Infrastructure and Communities (BRIC) program	Supports states, local, and territorial governments and Tribal Nations as they work to reduce their hazard risk	N/A	Cancelled in April 2025; ordered to be reinstated in December 2025
National Flood Insurance Program (NFIP)	Flood insurance to property owners, renters, and businesses, to help them recover faster when floodwaters recede	\$50,620,956	Active

Source: FEMA (2026c); Labowitz (2025); Raymond (2025)

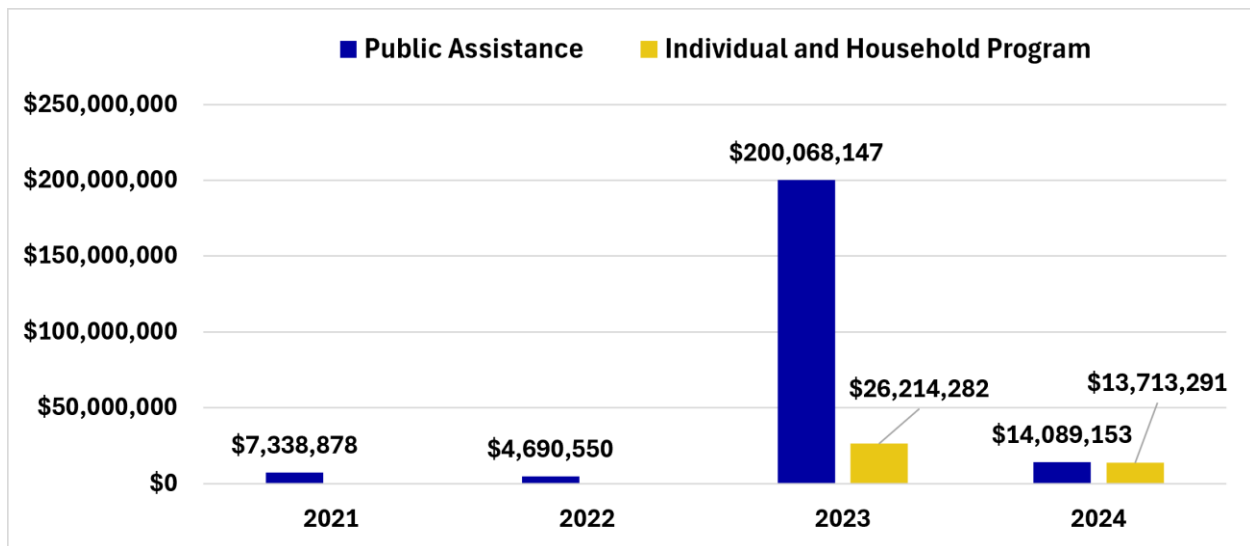


Figure 11-15 FEMA Public Assistance and Individuals and Households Program disbursements to Vermont 2021–2024

Source: FEMA (2026b)

Between 2022–2025, all Vermont counties received PA payments, except for Grand Isle, which was limited in the disasters declared (Figure 11-16). Washington County had the largest disbursement under PA at nearly \$121 million.

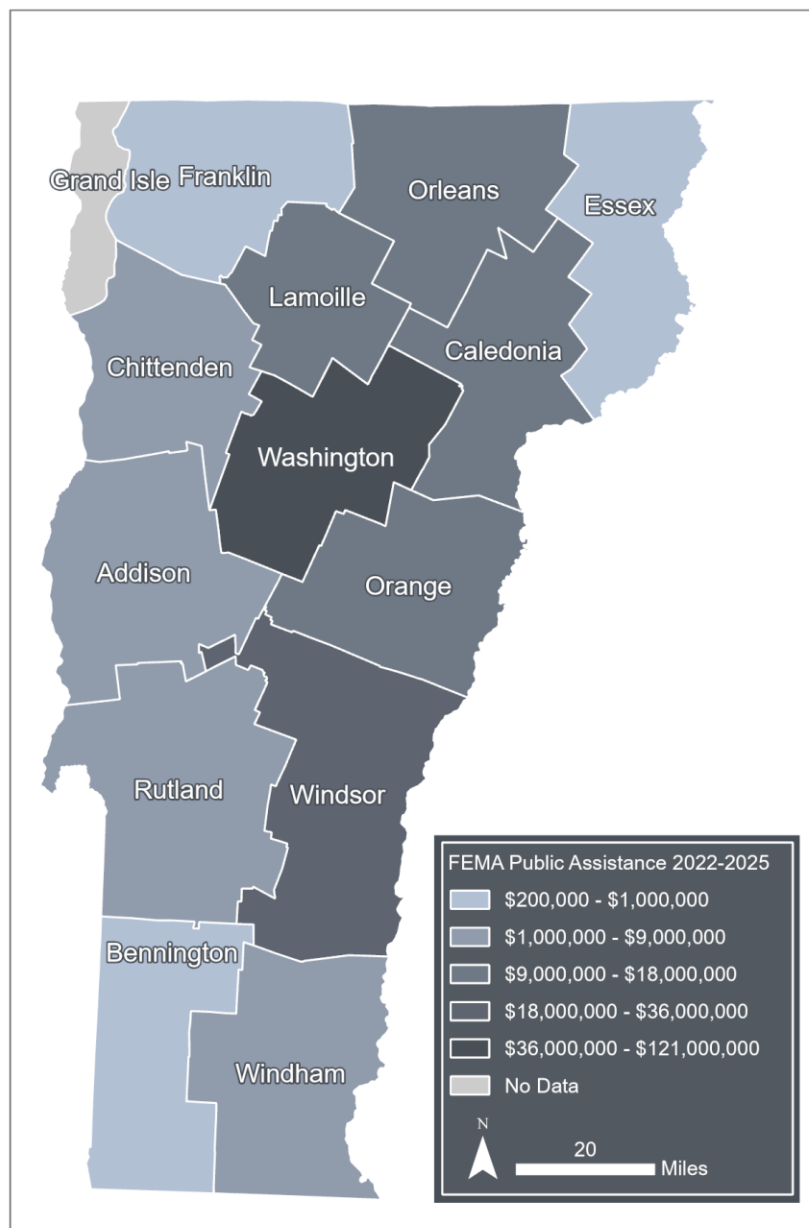


Figure 11-16 Federal Emergency Management Agency Public Assistance awards by county 2022–2025

Source: FEMA (2026c); PolicyMap (2025)

Note: Visualization by Hannah C. Turner

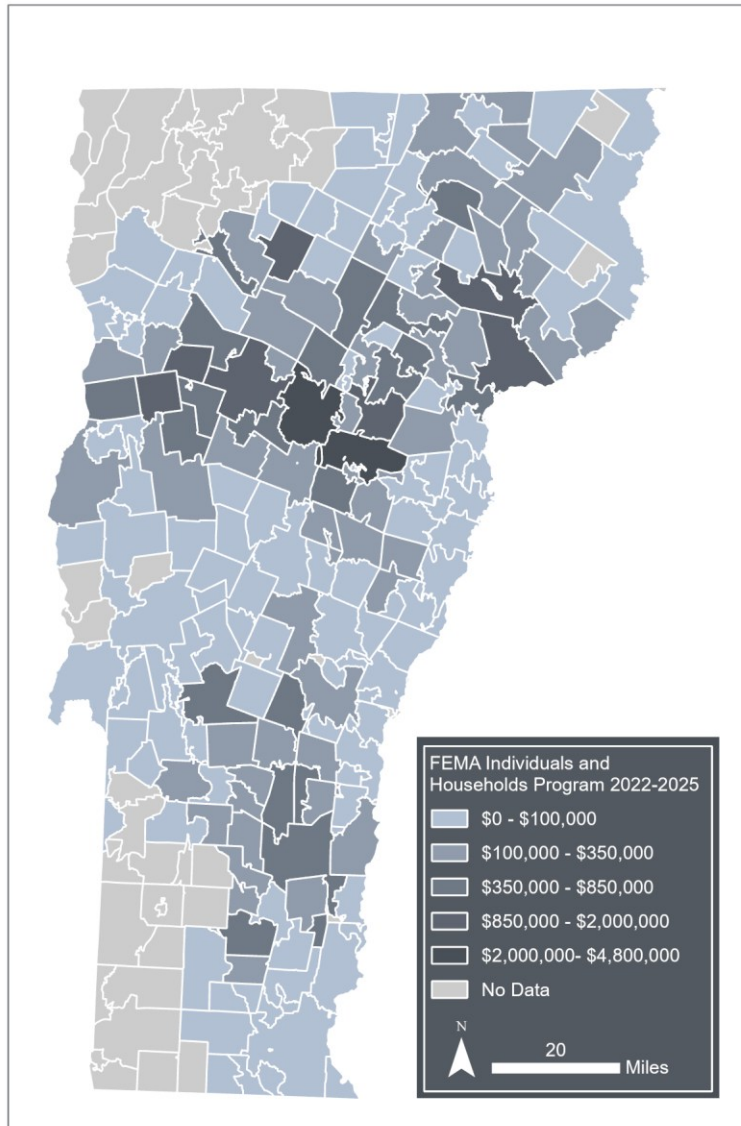


Figure 11-17 Federal Emergency Management Agency Individuals and Households Program assistance by zip code for 2022–2025

Source: FEMA (2026c); PolicyMap (2025)

Note: Visualization by Hannah C. Turner

Individual assistance through IHP from 2022–2025 was distributed across Vermont, with a significant portion going to Washington and Caledonia counties, which reported the highest number of uninhabitable homes after flooding events (Figure 11-15; see [Human Health Figure 10-8](#)). Property damage in the state was estimated at \$28 million, with the most substantial damage being concentrated along the Winooski River, southern Chittenden County, Washington County, and several areas in the northeast and southeast (Figure 11-18).

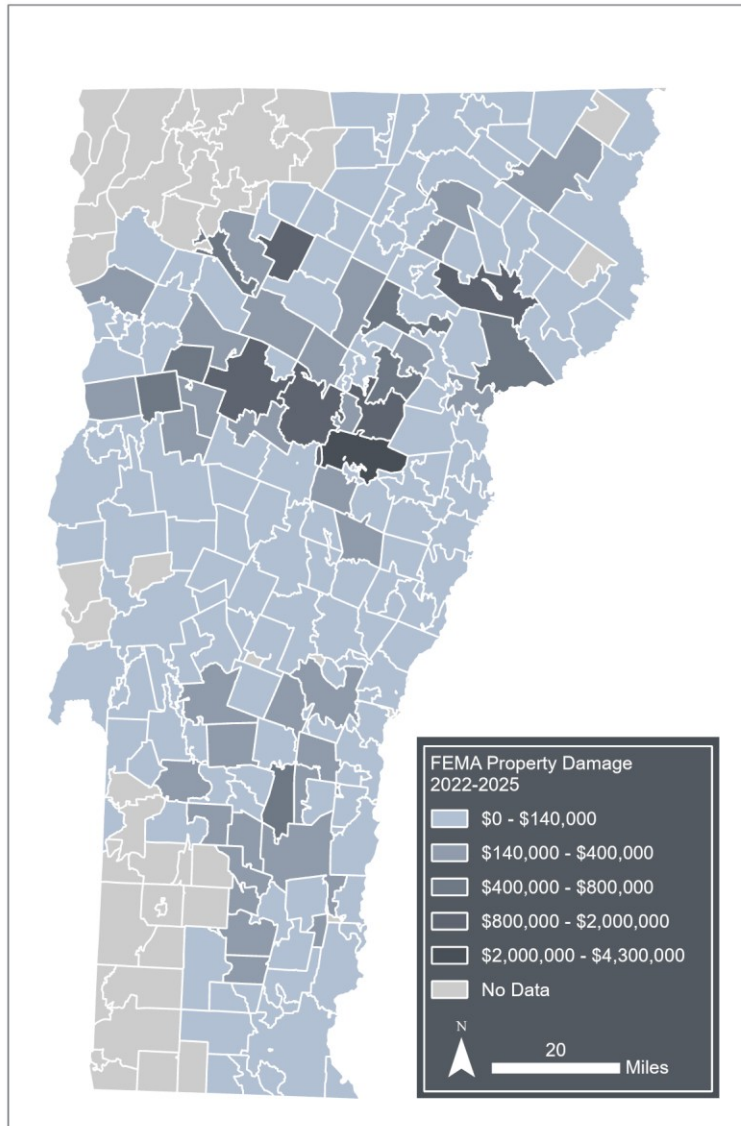


Figure 11-18 Federal Emergency Management Agency records of property damage by zip code for 2022–2025

Source: FEMA (2026c); PolicyMap (2025)

Note: Visualization by Hannah C. Turner

11.5.2 Response

Risk and crisis communication during the 2023 Vermont floods

Months before the Great Vermont Flood of 2023, emergency managers and other stakeholders involved in flood preparation and response identified localized flash flooding, rapid fluvial erosion, and concerns related to dam operations during flood events as some

of the region's most consequential hazards—risks that became apparent once the storms intensified (Soares et al., 2026).

The July 2023 flooding event reinforced the importance of risk and crisis communication in community preparedness, protective actions, and emergency coordination during extreme weather events. The Winooski watershed—one of the most affected regions—provides a detailed view of how emergency managers, planners, and local officials interpret threats, issue warnings, and support vulnerable residents under rapidly evolving conditions.

For the Winooski watershed, some communication practices worked effectively: Vermont Emergency Management's (VEM) recurring pre-storm coordination calls helped align local officials; National Weather Service's alerts provided steady meteorological updates; and mapping tools such as FEMA flood maps, though unevenly adopted, offered situational insights. However, some gaps became apparent. Warning terminology—such as flash flood watch, warning, and emergency—was largely misunderstood by the public. Generic protective instructions lacked the specificity required for localized decision-making. Confusion emerged around dam-safety messaging, where technical terms unintentionally suggested structural failure risks that never happened. Governance challenges further complicated communication: a decentralized emergency response system placed considerable responsibility on local officials who had variable training and capacity. Several local officials in smaller towns are unpaid as there was not a commonly adopted mechanism for public non-emergency personnel to shift focus to response in times of need, which made the response process more complex (Soares et al., 2026).

Inequities in information access surfaced; vulnerable groups (e.g., older adults, non-English speakers, low-income residents, manufactured-home park communities) had limited access to real-time updates, especially when messages were distributed primarily through digital platforms or opt-in systems. Message fatigue resulted when alerts were broadcast to individuals outside the hazard zone (Soares et al., 2026).

Despite these challenges, community mobilization played a vital role. Nonprofits, grassroots organizations, and volunteer groups provided substantial recovery support. Expanding their involvement during the pre-crisis stage would strengthen preparedness and outreach, particularly for populations traditionally left out of official communication channels.

The work by local officials and emergency managers in response to the Great Vermont Flood of 2023 was commendable. However, with a climate expected to produce increasing flood events, communication governance and flow to and from local and state officials will need

to be improved. Strengthening these systems will help reduce risks to both human life and critical infrastructure in future events (Box 11-1).

Box 11-1 Recommendations for strengthening flood risk and crisis communication

1. Improve clarity, relevance, and accessibility of warning messages

- Use clear, plain-language instructions that include what the threat means, why it matters, and what specific action to take.
- Tailor messages to specific locations and scenarios, avoiding one-size-fits-all guidance that can cause confusion.
- Replace jargon with straightforward explanations.
- Integrate multilingual communication and pre-scripted translations to reach those with limited English proficiency.
- Ensure messages are accessible across digital and non-digital channels to avoid exacerbating a digital divide.

2. Strengthen communication governance and coordination

- Conduct pre-crisis gap analyses to clarify roles, responsibilities, and communication pathways among federal, state, local, and community actors.
- Develop standardized protocols for message creation and distribution to reduce conflicting or duplicative alerts.
- Expand staffing and technical support for roles that require both operational expertise and public-facing communication.
- Use geo-targeted alerts to minimize message fatigue and improve the relevance of warnings.

3. Expand support for vulnerable populations

- Build partnerships with community organizations, nonprofits, and local leaders before disasters to establish trust and communication pathways.
- Identify barriers faced by vulnerable groups (e.g., language, limited internet access, mobility challenges) to create tailored outreach strategies.
- Increase resources for agencies responsible for assisting at-risk populations, ensuring they have the capacity to provide timely and more effective communication.
- Involve community organizations that were able to effectively respond to past disasters in future planning

4. Improve integration and use of predictive and mapping tools

- Incorporate erosion risk, not just inundation, into community conversations and preparedness materials.
- Use mapping tools to support more precise, localized messaging that aligns with the public's immediate decision-making needs.

11.5.3 Recovery

Long-term recovery groups

Locally led Long-Term Recovery Groups (LTRGs) exist throughout the state to bring together community organizations to help people with long-term recovery needs after a disaster (Figure 11-19). LTRGs are citizens-led non-profits that offer coordination of resources and volunteer recovery efforts and disseminate critical information about FEMA, state-led efforts, and local initiatives. Despite filling a vital niche in the state's recovery apparatus, they remain under-resourced and are not written into emergency plans, consulted on recovery strategy, or considered experts on these matters, which undercuts their effectiveness. These groups include census tracts with a significant population experiencing poverty (U.S. Census Bureau, 2024c). For example, the Kingdom United Resilience and Recovery Effort LTRG includes Essex County, where almost 16% of the population is facing food insecurity (Rabbitt et al., 2024).

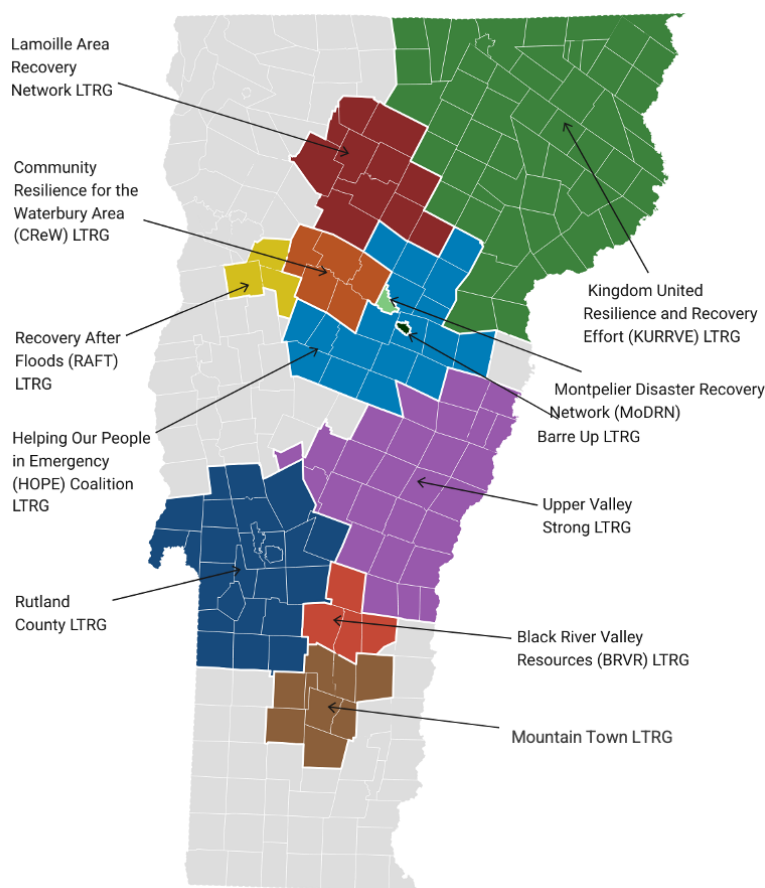


Figure 11-19 Map of long-term recovery groups (LTRGs) in Vermont

Source: Vermont Disaster Recovery (2026)

Emergency Relief and Assistance Fund

Understanding distribution patterns of emergency relief and assistance resources, programs, and planning helps detect differences in climate change resilience of communities across the state. An important state-level program is the Emergency Relief and Assistance Fund, which provides state funding to match federal PA funding after a disaster is declared by FEMA. Eligible public costs are reimbursed by federal taxpayers at 82.5%. For communities that take specific steps to reduce flood damage, the state contributes either 12.5% or 17.5% of the total cost. Communities that are eligible for 12.5% matching have adopted the National Flood Insurance Program, the Town Road and Bridge Standards, a Local Emergency Management Plan, and a Local Hazard Mitigation Plan. Communities that are eligible for 17.5% matching have taken all the steps mentioned above plus additional steps of either a) protecting river corridors from new development, or b) protecting their flood hazard areas from development and participating in the FEMA Community Rating System, which is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of NFIP.

Insurance

Flood insurance can provide payouts after flooding events even without a disaster declaration. However, flood insurance is relatively expensive, and only 2% of Vermont homeowners had flood insurance according to the Vermont Department of Financial Regulation (D'Ambrosio, 2023). This rate of coverage resembles that of other states. The two types of flood insurance available are 1) the National Flood Insurance Program (NFIP) administered by FEMA and 2) private flood insurance. In 2023, there were 3,534 NFIP policies and 2,676 private flood insurance policies written in Vermont (D'Ambrosio, 2023) though there are approximately 10,000 structures within FEMA-designated Special Flood Hazard Areas (State of Vermont Flood Ready, 2024). The Vermont 211 reports following the July 2023 and July 2024 flood events show that most impacted residential and commercial properties reported that they were not covered by flood insurance (Table 11-10 and Table 11-11). Efforts to expand flood insurance are needed to prepare Vermonters for more frequent and intense flooding (see [Climate Change in Vermont 2.6.2](#)).

In Vermont, nearly 90% of communities are eligible for the NFIP (Vermont Geoportal, 2026). Existing participation varies geographically across the state with non-participating communities concentrated in the northeastern counties (Figure 11-20). Coverage by NFIP does not equate to flood risk or exposure to inundation. In the continental U.S., estimates vary from at least 41 million people live in a 100-year floodplain (Wing et al., 2022) to lower estimates of 13–23 million people based on FEMA maps (Qiang, 2019; Wing et al., 2022).

NFIP payouts for the 2023 and 2024 floods totaled about \$43.3 million and \$7.2 million, respectively (FEMA, 2026b), with disparities in disbursement across the state (Figure 11-21).

Table 11-10 Residential properties by county that reported their flood insurance status in Vermont 211 reports for the July 2023 and July 2024 flood events

County	July 2023			July 2024		
	Yes	No	Unknown	Yes	No	Unknown
Addison	35	501	15	11	168	0
Bennington	10	90	2	0	1	0
Caledonia	30	251	3	69	792	2
Chittenden	34	180	3	52	468	1
Essex	0	9	0	2	112	0
Franklin	2	49	1	0	8	0
Grand Isle	0	5	0	0	1	0
Lamoille	38	354	7	9	91	0
Orange	32	358	6	3	26	0
Orleans	34	344	9	12	168	1
Rutland	34	125	1	1	3	0
Washington	243	1417	11	116	774	1
Windham	27	167	2	0	2	0
Windsor	70	457	11	0	4	0
All counties	589	4,307	71	275	2,618	5

Source: Vermont Emergency Management (2023a)

Note: Respondents were given the options “Yes”, “No”, and “Unknown”

Table 11-11 Businesses by county that reported their flood insurance status in Vermont 211 reports for the July 2023 and July 2024 flood events

County	July 2023		July 2024		Unknown
	Yes	No	Yes	No	
Addison	4	47	2	10	4
Bennington	1	7	0	2	1
Caledonia	0	10	16	92	0
Chittenden	0	14	7	41	0
Essex	0	1	0	11	0
Franklin	3	4	0	1	3
Grand Isle	0	0	0	1	0
Lamoille	4	12	0	7	4
Orange	2	9	0	7	2
Orleans	5	23	2	13	5
Rutland	0	3	0	0	0
Washington	21	64	19	49	21
Windham	5	14	0	0	5
Windsor	8	31	0	1	8
All counties	53	239	46	235	53

Source: Vermont Emergency Management (2023a)

Note: Respondents were given the options “Yes”, “No”, and “Unknown”

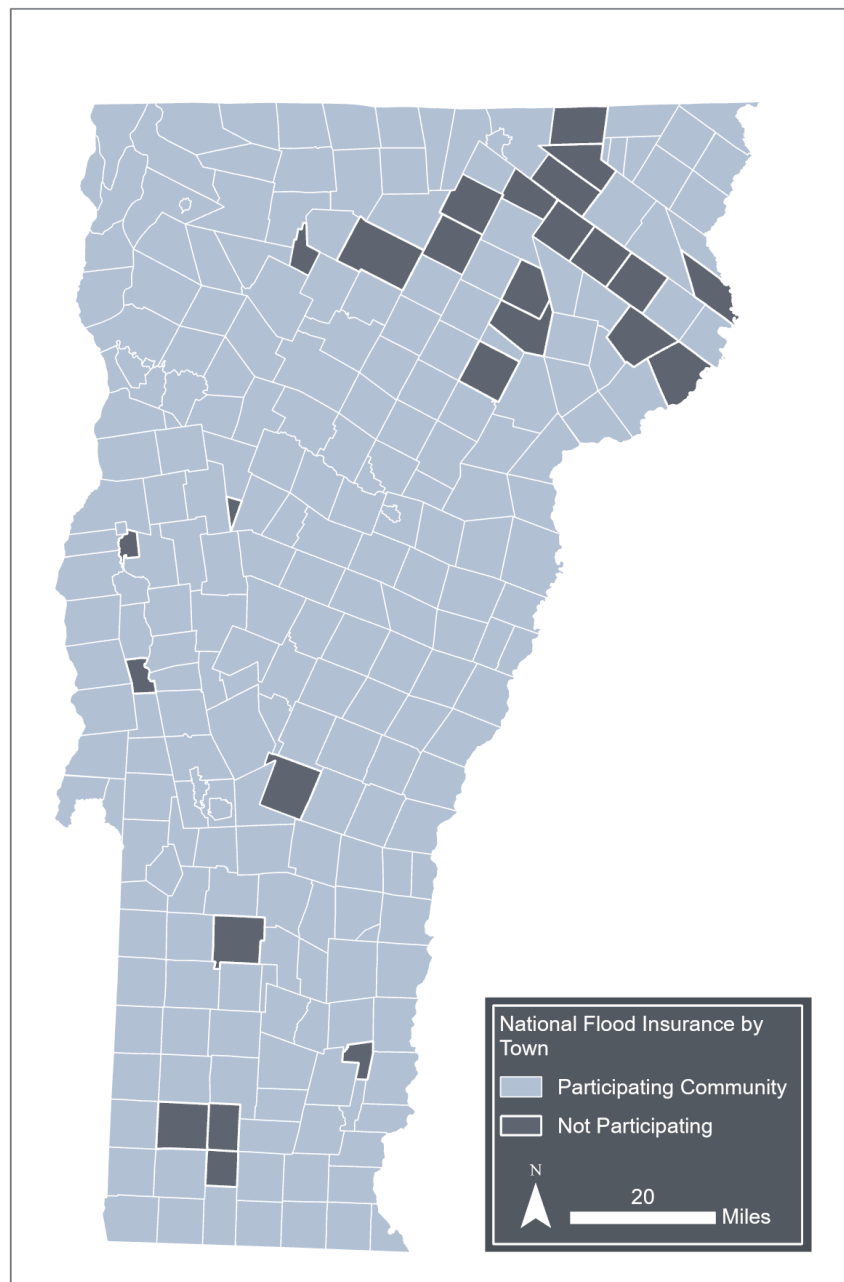


Figure 11-20 Map of National Flood Insurance Program (NFIP) coverage by municipality

Source: Vermont Geoportal (2026)

Note: Visualization by Hanah C. Turner

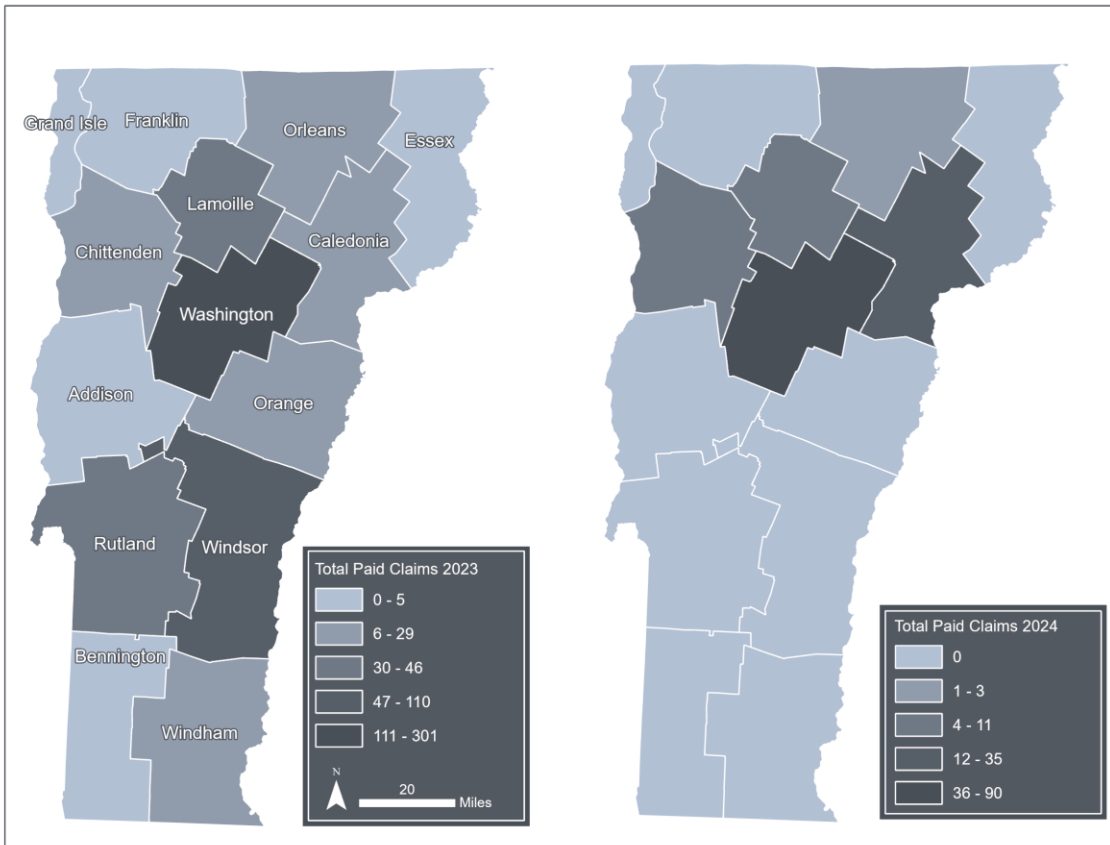


Figure 11-21 National Flood Insurance Program claims paid in 2023 (left) and 2024 (right) in Vermont counties

Source: FEMA (2026a)

Note: Visualization by Hanah C. Turner

Buyouts

Federal, state, and other programs in local governments and non-governmental organizations exist to purchase and subsequently demolish homes damaged by flooding rather than repairing or rebuilding them. As of December 2025, only around 3% (8 of 264) of buyout applications have been paid out by FEMA for the 2023 and 2024 flooding events. Recent changes to FEMA's rules and eligibility requirements for federal buyouts have slowed progress (Berlin, 2025). In Lamoille County, the majority of buyouts were funded by the state; for example, 62.5% (5 of 8) of buyouts in Wolcott are state-led (Calvin et al., 2023).

There are challenges for homeowners who do receive buyouts, as the funds often go towards covering remaining mortgage expenses rather than payments directly to the homeowners. In some cases, the buyout does not cover the full amount of the mortgage and homeowners are left with debt. Further, since buyouts are administered locally, some municipal governments have been denying buyout requests from homeowners because the

demolition of these homes would lead to a reduction in the towns' property taxbases (McCallum, 2024).

Vermont is ranked highest in the nation in terms of vulnerability to flood risks measured by overvaluation of homes and a high percentage of the total municipal revenue stemming from property taxes, with 64% of counties falling into the most vulnerable quintile (Gourevitch et al., 2023). In the absence of buyouts, homeowners sell their homes in regular real estate transactions, simply transferring risk to other individuals. Under the business-as-usual climate scenario, floods could reduce housing stock; in this case, the lack of insurance and buyouts would lessen home values, undermining individual and community capacities to adapt (Gourevitch et al., 2023).

11.5.4 Mitigation

Community Development Block Grant Disaster Recovery (CDBG-DR)

Anticipating future extreme events, the Vermont Agency of Commerce and Community Development was awarded a Community Development Block Grant of \$67.8 million from the U.S. Department of Housing and Urban Development in 2025 (Vermont Agency of Commerce and Community Development, 2026). As of November 2025, 77% of funds were awarded in pursuit of several broad areas of community development including housing (\$27.5 million), infrastructure improvement (\$13.3 million), planning (\$3 million) and flood mitigation (\$6.2 million; Vermont Agency of Commerce and Community Development, 2026).

Most funds have been awarded to the housing sector (55% of the total awarded funds). As of March 12, 2026, 65% of the available housing funds have been awarded, while 100% of the funds for infrastructure, planning and mitigation have been awarded, meaning that the remaining funds (\$14.5 million) are dedicated to housing (Vermont Agency of Commerce and Community Development, 2026). Grants are geographically concentrated in the Housing and Urban Development (HUD) "Most Impacted and Distressed" counties of Washington and Lamoille. Affordable housing is prioritized, with a proposed 195 new units and 35 renovated units in Barre (122), Montpelier (53), Ludlow (44), Johnson (25), and Plainfield (8). The average amount awarded per unit is \$140,948 (Vermont Agency of Commerce and Community Development, 2026).

Awards were granted for flood resilient bridge infrastructure and roadways for Cabot's North Tributary (\$1.25 million) and Brattleboro's Detman Bridge (\$1.7 million; Vermont Agency of Commerce and Community Development, 2026). Barre received an award (\$856,428) to increase floodplain capacity and redesign Gunners Brook (Vermont Agency of Commerce and Community Development, 2026). In Barre, the Good Samaritan Haven received funds

to relocate a homeless shelter out of the floodplain (\$3.3 million; Vermont Agency of Commerce and Community Development, 2026). Lamoille Regional Planning Commission and the Village of Morrisville received an award to improve the flood resilience of the municipal water supply (\$3.2 million; Vermont Agency of Commerce and Community Development, 2026). The Two Rivers-Ottawquechee Regional Commission received an award to buyout potentially contaminated properties stemming from the July 2023 floods (\$3 million; Vermont Agency of Commerce and Community Development, 2026).

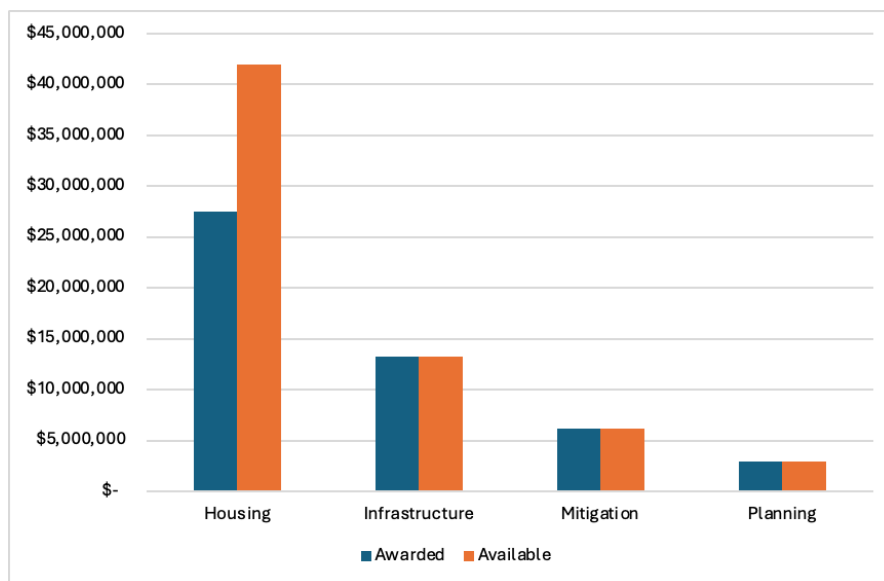


Figure 11-22 Community Development Block Grant funding awarded to the Vermont Agency of Commerce and Community Development and amount available fund by category

Source: Vermont Agency of Commerce and Community Development (2026)

Three mitigation grants were awarded to the towns of Waterbury (\$2 million), Weston (\$3 million), and Hardwick (\$1.2 million; Vermont Agency of Commerce and Community Development, 2026). These funds are going towards resources for dam removal, engineering and installation of green infrastructure for floodplain restoration and flood resilience.

Eight planning grants ranging from \$100,000 for East Montpelier to \$1,000,000 for Lamoille County Planning Commission were awarded for the purpose of flood mitigation planning through scoping and feasibility studies, engineering, and design of high-impact stormwater projects; capacity building for shovel-readiness for resilient infrastructure and conducting a flood modeling and hydrology study of the Upper Winooski River Basin to identify watershed and municipal scale flood hazard mitigation projects (Vermont Agency of Commerce and Community Development, 2026). Ultimately, these awards address underlying gaps in

technical and financial capital needed to expand access and availability of affordable housing in some of the most high-risk flood geographies in Vermont. Increasing resources for affordable housing while improving flood mitigation infrastructure and nature-based solutions are recommended for all of Vermont's communities.

11.5.5 Preparedness and education

Disaster preparedness education aims to equip individuals and groups with actionable knowledge to reduce their vulnerability to disasters (Box 11-2). Disaster preparedness education increases awareness, enhances understanding, and builds capacity in disaster risk reduction, response, and recovery (Guo et al., 2025). It includes educating individuals about the potential hazards they may face, teaching them how to develop emergency plans, and training them in emergency response techniques. It also encompasses educating communities on the importance of developing resilient public and private infrastructure, early warning systems, and fostering a culture of preparedness. It is a functional, operational, and cost-effective tool for risk management. It creates a culture of safety and resilience at all levels (Torani et al., 2019). With climate change increasing the frequency of disasters, it is important to make this kind of education more widespread and accessible.

Both the Vermont Department of Health (VDH) and VEM (under the Department of Public Safety) have several resources for individuals, businesses and family preparedness for disasters (Vermont Emergency Management, 2026). These include instructions on building a preparedness kit and family emergency preparedness workbooks that are available in ten different languages common in Vermont's communities. A business preparedness workbook is published by VEM to introduce business owners to climate hazard and continuity planning. VEM manages and provides support to several emergency response agencies in Vermont. VEM regional coordinators are assigned to every county in Vermont to aid in planning development, training, and exercise support in communities. However, state-led organizations like VDH and VEM face barriers to deeper community engagement because they are governed by bureaucracy, which is limited by the lack of flexibility and trust in government (Campbell et al., 2022; Davis et al., 2025; Satizábal et al., 2022). For example, flooded towns experienced an emergency response slowed by bureaucracy, which is why community-led responses were so abundant and effective.

Individuals and communities responded to recent disasters (Table 11-8) with collective action and by harnessing aid from local, state, and federal sources (Gaffney, 2026; Vermont Public Staff, 2024). For example, grassroots flood responders created a toolkit to support communities in advancing their flood preparedness in future disasters (Resilience Hub, 2026). Resources developed by communities for communities allow for the expansion of

response and preparedness through both formal (e.g., municipal, state, federal) and informal channels (Shi & Moser, 2021).

Box 11-2 Climate change and education

Schools can play a meaningful role in community resilience because they are central institutions directly involved in the development of systems thinking, collaboration, equity analysis, and civic participation, all of which align with resilience indicators identified in the community development literature.

National research supports the value of climate education in reducing student anxiety and increasing students' sense of agency and adaptive capacity. A community-based environmental education study documented statistically significant increases in participants' reported adaptive capacity and civic action after structured climate learning experiences (Ardoin et al., 2022). The Ipsos/National Public Radio national teacher poll (2019) found that 82% of teachers report that climate change is happening and 86% believe it should be taught in schools, but 55% do not teach it due to limited training, resources, or time. These findings highlight the need for structured, evidence-based approaches that can support both educators and communities.

Across Vermont, educators, students, and community partners are practicing climate action through applied, real-world experiences. For example, the Equitable Climate Action Partnership (ECAP) assists schools in understanding climate impacts in their own communities and engaging in mitigation and adaptation projects that relate to flooding, biodiversity, food systems, and energy transitions.

Regional data also suggest that Vermont is well-positioned to benefit from school-based climate learning. A Northern Borders resilience survey (Daigneault, et al., 2023) found that communities in this multi-state region reported higher levels of social resilience, including trust, shared leadership, and civic engagement compared to economic or infrastructural resilience measures. These findings indicate that Vermont's social systems, including schools, may be strong leverage points for resilience-building. Economic data reinforce this opportunity. Vermont already supports approximately 18,900 workers in climate-related fields such as energy efficiency, renewable energy, transportation, natural resources, and ecosystem restoration (Energy Action Network, 2026). This suggests a direct connection between climate education, workforce development, and community capacity. A current example of community-based climate action comes from the Upper Valley Super Compost Project, which supports schools in designing and implementing comprehensive composting systems.

11.6 PLANNING, GOVERNANCE, AND POLICY

Planning for resilience allows for identification of climate risks and creation of an overall framework for addressing and managing them. Planning includes measures to deal with both short-term and long-term risk, with a goal of proactive, not reactive, climate action. Further, planning and governance frameworks provide the basis for the development of effective policy instruments.

The development and implementation of plans and policies are shaped by governance structures and thus impact their success. Tackling climate issues is a multi-level governance challenge that requires integrating and coordinating across a wide range of sectors. Governance involves actors and institutions across government—at the federal, state, and local levels—as well as civil society and non-governmental institutions. Interactions between these actors not only shape the goals and design of climate policy but also determine their operationalization and ultimate outcomes.

11.6.1 Climate action at the state level

The most recent, significant state-level development on climate action has been the Global Warming Solutions Act (Act 153; Vermont Climate Council, 2025). The law binds the state to reduce greenhouse gas emissions according to targets in line with the Paris Agreement. It established a Climate Council tasked with the development of a Climate Action Plan, which is required to include recommendations for, and assessments of, resilience and adaptation. Public engagement for input through community events and public comment was a core part of the 2025 Climate Action Plan Update. The priority recommendations related to resilience are:

1. Expand and maintain a permanent Flood Resilience Communities Fund
2. Invest in municipal infrastructure to support compact development
3. Increase funding and adapt existing Vermont programs that achieve climate goals on farms and in forests
4. Promote equitable landscape connectivity and conservation for 30x30 and 50x50 goals
5. Support utility programs that ensure the electric grid supports customer electrification and resilience
6. Identify revenue sources to immediately support these priority actions
7. Implement the Climate-Ready Workforce Initiative and related actions

The Vermont Agency of Natural Resources is responsible for implementing the recommendations in the Climate Action Plan by developing specific actions (Vermont Climate Council, 2025). For resilience and adaptation, the agency led the development of

the Vermont Resilience Implementation Strategy (Vermont Agency of Natural Resources & Vermont State Treasurer’s Office, 2025). Actions fall under the following strategic priorities: improving government systems for planning and implementation, community-centric approach, early warning systems and rapid response, economic and environmental sustainability, infrastructure design and reinforcement, and nature-based solutions. Key themes include increasing state agency capacity and coordination, setting up dedicated funds for adaptation and post-disaster response, technical and financial assistance for municipalities, and providing resources for climate-resilient small business and workforce development.

11.6.2 Local and regional level governance and planning

Decentralization is a key aspect of governance in Vermont because of the absence of county-level governing bodies. In Vermont, most decision-making occurs at the municipal level on issues such as infrastructure development, land use, land taxation, community services, and public safety. Regional planning commissions provide technical assistance to municipalities and link municipal governments together and to the state government, but they do not have elected members or tax authority. There are 11 regional planning commissions (RPC) in the state, and they work across sectors including land-use, transportation, housing, economic development, and environmental quality (Figure 11-23). Through their guidance, the Vermont Climate Action Office is piloting a framework for municipal climate planning in line with state climate goals and priorities. The program will test a draft in a few municipalities and then a final resource will be created by the end of 2026 (Climate Action Office, 2025).

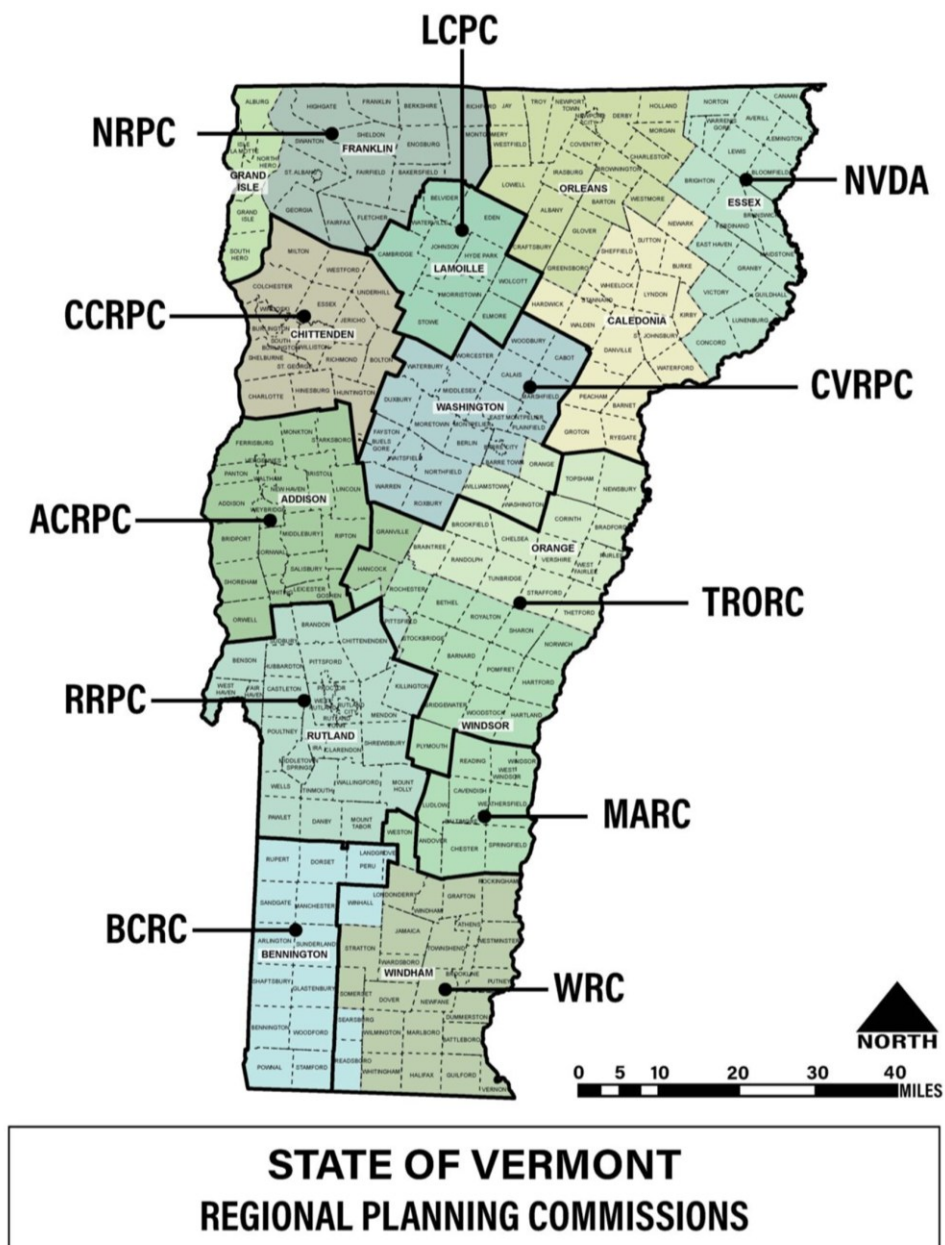


Figure 11-23 Map of the 11 regional planning commissions in Vermont

Source: *The Flood Safety Act* (2025)

Incorporating climate risks via Local Hazard Mitigation Plans

Climate risk can be identified and assessed through municipal Local Hazard Mitigation Plans (LHMPs), which are prerequisites for federal funding for FEMA assistance and can be enhanced to include more comprehensive resilience measures including adaptation, nature-based solutions, and community services. RPCs support municipalities in developing LHMPs, which are then submitted for approval to VEM. RPC support includes

technical expertise for municipal plans, zoning, and bylaws to incorporate floodplain regulations, river corridor protections, and climate-adaptive policies. They assist with flood inundation studies, planning for culvert and road replacements, and fulfilling community buyouts. Given the high risk of floods in the state, all LHMPs address flooding (Table 11-12). Nearly all address fluvial erosion, and other weather hazards such as flash floods, ice jams, wildfires, drought, landslides, and extreme temperatures are less frequently addressed. Municipalities work with RPCs to develop regional plans that help coordinate and scale action across towns, reducing fragmentation and improving action under limited local-level capacity.

Table 11-12 Climate-related hazards in approved local hazard mitigation plans (LHMPs) as of June 2023

Hazard	Approved Plans	Percent of Approved Plans
Flooding	134*	100.00%
Fluvial Erosion	125	93.30%
Winter Storms	115	85.80%
Ice Storm	101	75.40%
High Wind	87	64.90%
Flash Flood	69	51.50%
Extreme Cold	62	46.30%
Hail	48	35.80%
Wildfires	47	35.10%
Drought	46	34.30%
Thunderstorms	42	31.30%
Hurricanes/Tropical Storms	39	29.10%
Landslides	38	28.40%
Earthquakes	38	28.40%
Infectious Disease Outbreak	37	27.60%
Invasive Species	36	26.90%
Extreme Heat	36	26.90%
Ice Accretion	33	24.60%
Dam Failure	32	23.90%
Tornadoes	27	20.10%
Ice Jams	26	19.40%
Lightning	26	19.40%

Source: Vermont Emergency Management (2023b)

Note: *134 plans were approved between 2017 and June 2023; some are multi-jurisdictional

RPCs are deeply involved in project scoping, grant writing, and project management for resilience projects, leveraging programs like the VEM-run program, Flood Resilient Communities Fund, FEMA's BRIC grants, and the Resilience Initiative for Vermont Empowerment and Recovery administered by Two Rivers-Ottawaquechee Regional

Commission (Resilience Initiative for Vermont Empowerment and Recovery (RIVER), 2025). For instance, the Bennington Regional Planning Commission is applying a transportation resilience planning tool to the Batten Kill watershed (Bennington Regional Planning Commission, 2024), and the Lamoille County Planning Commission is developing a regional flood resiliency and recovery plan (Lamoille County Planning Commission, 2024).

RPCs primarily focus on infrastructure projects; for example, they are supporting multiple flood resilience projects along the upper Mad River, a scoping study to reduce flood risk from Big Branch in Mount Tabor (Rutland Regional Planning Commission, 2025), and numerous road and culvert replacement projects aimed at preventing washouts across the state. The Northeastern Vermont Development Association is managing flood recovery projects that include floodplain restoration in Lyndon and ice jam flooding mitigation in Coventry (King and DuBois Inc., 2025; Northeast Vermont Development Association, 2018). These initiatives and resources support municipalities as they center resilience in community development.

Unhoused populations are not always explicitly mentioned in plans developed by RPCs: 80% mention ‘unhoused’ or ‘homeless’ populations, while only 50% have dedicated subsections or headings. There is minimal discussion and focus on mitigating the risks and vulnerabilities that unhoused populations face due to environmental exposure. The county with the largest unhoused population, Chittenden, has no mention of unhoused populations in their 2018 plan (Chittenden County Regional Planning Commission & Good Jobs In a Clean Environment, 2018). Many reports that were published more recently (i.e., after 2020) have explicit references to unhoused populations. It is anticipated that due to recent increases in unhoused populations, more robust consideration in planning is underway for upcoming plans.

Greenhouse gas emissions mitigation

Regional planning in the transportation and energy sectors is key to climate change mitigation. The Municipal Energy Resilience Program is a major initiative across all regions that helps towns weatherize and electrify public buildings. For example, the Northwest Regional Planning Commission is implementing the Climate Pollution Reduction Grant and has partnered with Saint Albans City on a transportation needs assessment and an enhanced energy plan. The Addison County Regional Planning Commission aims to increase local capacity by assisting with the development of an energy navigator program to help residents with weatherization (Addison County Regional Planning Commission, 2022). The Chittenden County Regional Planning Commission has updated municipal energy data guides and is helping five municipalities create or update their enhanced energy and climate plans to meet state standards (VAPDA, 2025). The Northeastern Vermont Development

Association administers \$11.4 million in energy resilience funding for Northeast Kingdom communities under the solar installation and design training program, which serves to boost workforce development in the region (Northeast Vermont Development Association, 2025). Scaling up the Municipal Energy Resilience Program may provide communities with needed resources to expand mitigation efforts and increase energy efficiency and cost savings.

Leveraging co-benefits for water quality

Municipalities and regions across Vermont are simultaneously addressing climate hazards (like flooding) and water quality concerns. For example, the Central Vermont Regional Planning Commission is developing non-regulatory water quality and flood resilience projects along the upper Mad River and has assisted towns like Middlesex and Woodbury with grant applications for road resiliency and flood mitigation (VAPDA, 2025). The Lamoille County Planning Commission is using \$604 billion in program funding to develop conceptual design plans for water quality and flood mitigation projects in Cambridge, Johnson, and Wolcott (Lamoille County Planning Commission, 2024; VAPDA, 2025). The Mount Ascutney Regional Commission is administering a \$3.2 million block grant for statewide water quality and flood resilience improvements and assisted Ludlow with the Resilience Initiative for Vermont Empowerment and Recovery project for a FEMA grant application (Mount Ascutney Regional Commission, 2025). The Rutland Regional Planning Commission is managing a scoping study for the Mount Tabor town garage and produced a map of inundation areas for a theoretical dam failure at the Chittenden Reservoir (VAPDA, 2025).

11.6.3 Land-use planning

Development patterns

Historic patterns of land use profoundly influence how communities are positioned geographically, socially, and economically—and how exposed they are to climate risk. Beginning with the dispossession of Indigenous peoples, Vermont’s history includes extensive deforestation to convert forests into fields for subsistence pasture and agriculture and channeling rivers for lumber transport. These land transformations from the early Industrial Revolution shape some vulnerable aspects of communities. Successive waves of changing land use shaped settlement patterns that concentrated development in narrow river valleys and disconnected floodplains—precisely the landscapes most exposed to the flooding that climate change is intensifying. Continued fragmentation of natural and working landscapes through conversion to impervious, built environments will likely increase adverse impacts.

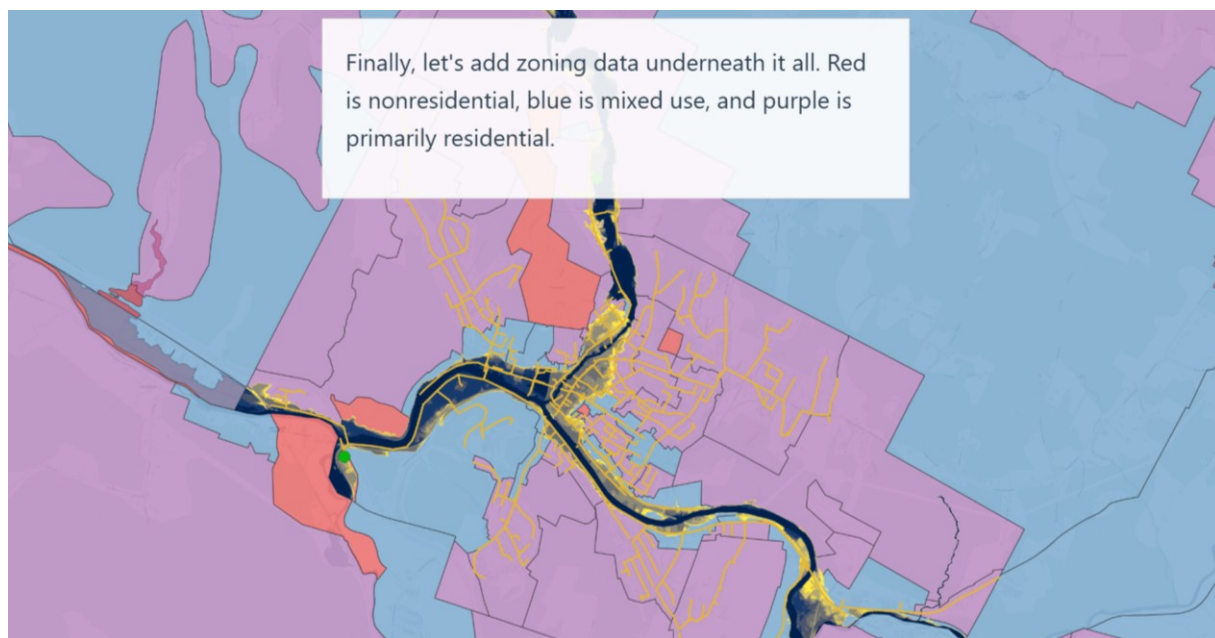
Land-use planning and sustainable urban design can help reduce emissions and improve climate resilience in communities (see [Infrastructure 7.7](#); [Human Health 10.11.5](#)). To

increase resilience, development may be concentrated in existing urban and village centers on higher ground, away from floodplains and river corridors. Natural buffers (e.g., forests, wetlands, floodplains, riparian areas) must be protected and restored at-scale to reduce flood risk. Infrastructure investment must prioritize the retrofitting and climate-proofing of existing communities. Housing supply must expand substantially in walkable, transit-accessible locations. A walkable community allows for active transportation which in turn improves health outcomes from more physical activity and reduces air pollution (see [Human Health 10.11.1](#)). At the same time, walkable communities less reliant on private gas-powered vehicles lowers greenhouse gas emissions (Sallis et al., 2012). The Vermont Livability Map is a pilot project that aims to determine where development should take place (Box 11-3).

Box 11-3 Vermont Livability Map

The Vermont Livability Map is a pilot project to provide tools and resources to determine what can be built with the land in Vermont. The Vermont Research Open Source Program Office (VERSO), the Vermont Complex Systems Institute, the Leahy Institute for Rural Partnerships, and undergraduate student interns in the Open Research Community Accelerator (ORCA) program are all collaborating on its development.

The project uses LiDAR-informed flood inundation data, sewage lines, wastewater treatment facilities, and zoning to help identify what can be built and where.



Source: Vermont Research Open Source Program Office et al. (2026)

Green infrastructure, nature-based solutions, and ecological restoration

Understanding communities as social-ecological systems means recognizing that natural systems and processes influence community resilience. Green infrastructure and nature-based solutions can harness the environment to help communities both mitigate and adapt to climate change (Opperman & Galloway, 2022).

Whereas Vermont's pre-colonial landscape was characterized by a network of wetlands and many beaver dams that slowed the movement of water, development and landscape transformation have straightened and channelized many streams, increasing discharge velocity and streambank erosion (Kline & Cahoon, 2010). This development has diminished many ecosystem services provided by wetlands and connected floodplains (e.g., water, filtration, water retention); these losses can exacerbate the impacts of more extreme streamflow caused by more intense precipitation (Kline & Cahoon, 2010). Restoration of floodplain ecosystems is a nature-based, cost-effective solution to prepare for more frequent extreme weather events and rebuild community resilience (Gourevitch et al., 2020). Gentrification is a possible side effect following the implementation of nature-based solutions as access to nature can increase property values (Quinton et al., 2022; Stroud et al., 2023). Preventing the displacement of communities that could benefit the most from nature-based solutions should be considered and prioritized (D'Amico, 2025; Gourevitch et al., 2020).

Many nature-based solutions, and other green infrastructure projects, can be integrated into existing infrastructure to create cost-efficient resilience measures with co-benefits for people and wildlife. In 2017, Vermont created the Stormwater Management Manual Rule and Design Guidance to integrate green infrastructure (e.g., vegetation cover, green roofs, wetlands, bioretention; Vermont Agency of Natural Resources, 2017). Urban tree canopy is another common type of green infrastructure that can reduce temperatures and alleviate urban heat island effect (Zhou et al., 2021). Investing in greater canopy coverage has co-benefits such as keeping air temperatures cooler and storing carbon (Elmqvist et al., 2015).

Mobility and built environment

Transportation accounts for approximately 40% of Vermont's greenhouse gas emissions (Climate Action Office, 2025; see [Energy 8.3](#)), and thermal heating of residential and commercial buildings accounts for another 30%. Together these two sectors represent nearly three quarters of the state's emissions—and both are deeply shaped by land-use decisions.

The transition away from fossil fuel dependence requires making active transportation and public transit viable options for a greater share of Vermonters. This would require investing

in connected networks of sidewalks, protected bike lanes, and multi-use paths to allow for these modes of transport to be used for commuting. It entails the expansion of public transit. Designing communities around the assumption of universal car ownership may exclude lower-income residents, older adults, young people, and people with disabilities.

Legislative efforts

Vermont's legislature has taken actions to address the integrated nature of housing, working lands, natural environments, and rural development. For example, the HOME Act (Act 47) designates a minimum density requirement of at least five dwelling units per acre for new residences that are served by municipal water and sewer lines. Another land-use planning example is the Flood Safety Act (Act 121) of 2024 that reduces flood risk and vulnerability to flood damage through multiple avenues: regulating proposed development in river corridors, setting municipal floodplain management requirements, establishing a "net gain" rule of 2:1 for wetland conservation, and improving dam safety (*The Flood Safety Act*, 2024).

11.6.4 Social protection

Social protection measures (e.g., social safety nets, insurance programs, provision of essential services) support communities' resilience to extreme weather and other types of shocks by addressing socioeconomic risks (Tamasiga et al., 2024). Social protection centers equity and human dignity, aiming to ensure people's well-being. In the context of climate change risks, it can encompass two complementary approaches: 1) reactive assistance to those already affected; and 2) proactive structural reform to reduce vulnerability before shocks occur. Integrating social protection into community planning is essential for preventing the long-term erosion of livelihoods in climate-sensitive sectors like recreation, tourism, and agriculture.

The first approach (i.e., reactive assistance) focuses on providing direct assistance to affected populations after climate shocks or slow-onset climate impacts have already occurred (International Labour Office, 2024). For acute events, this includes expanding access to disaster relief, emergency housing, food assistance, and mental health services in the aftermath of extreme weather or natural disasters (Oxford Policy Management, 2017). Federal policy trends, such as cuts to Medicaid and federal nutrition assistance programs, are shifting greater responsibility onto the state (Hirschfeld, 2025), while simultaneously reducing the resources available to those most exposed to climate impacts. Vermont's General Assistance program, state-funded housing stabilization programs, and the 3SquaresVT program are existing state mechanisms that could be strengthened and made more responsive to climate-related needs.

The second approach (i.e., proactive structural assistance) addresses structural inequalities that make certain populations disproportionately vulnerable. This requires addressing underlying conditions (e.g., poverty, economic inequality, racial inequality, housing insecurity, inadequate healthcare, wage stagnation) that determine who bears the greatest burden of climate impacts. For example, community land trusts and public housing may offer affordable housing options to address housing insecurity and poverty. For example, the Champlain Housing Trust provides affordable access to housing; it sells its homes to low-income buyers who benefit from a low 0.5% foreclosure rate (Temkin et al., 2010). A study of community land trusts in Minneapolis found that homeowners noted the significance of affordability gained by joining the trust and reported feeling more stable and able to pursue new employment and educational opportunities (Hackett et al., 2019). Vienna, Austria offers another successful model for social housing: 40% of households live in social housing where rents are lower than in the private housing market. The Viennese model is accessible to broad parts of the population, not just low-income applicants; it therefore increases the “social mix” in neighborhoods, which is the diversity of residents’ ethnicity, income, education, and other socioeconomic factors (Premrov & Schnetzer, 2023). Beyond housing, another example of proactive structural assistance is expanding affordable healthcare. Communities with access to universal healthcare have improved health outcomes, fewer bankruptcy filings, and reduced family financial crises, thus decreasing climate vulnerability of communities (Garrett et al., 2009).

11.6.5 Social cohesion and psychology

Social cohesion is important for sustainability and resilience because it is a key factor for a community’s ability to bounce back after a shock (Sobhaninia, 2024). While conceptions of social cohesion vary, they usually include the following dimensions: sense of belonging versus isolation, inclusion versus exclusion, trust versus distrust, and participation versus non-involvement (Jenson, 1998). Aspects that increase social cohesion include social support networks, social participation, and community engagement (Sobhaninia, 2024). These aspects can exist within and across communities or within state/other institutions.

Resilience can be understood as a process, with social cohesion being one key part. Communities that have “dense preexisting networks of trust and reciprocity” are more likely to be better prepared for shocks, including climate shocks (Tamasiga et al., 2024). According to Vermont’s Civic Health Index, the state ranks second in the U.S., “for working with neighbors to do something positive for the neighborhood or community and for discussing political, societal, or local issues with neighbors” (Vermont Secretary of State’s Office et al., 2025). Trust in local government is much higher than trust in the federal government, and confidence in local government further increased during the COVID-19

pandemic. Vermonters are more politically engaged in their communities compared to residents of other states (Vermont Secretary of State's Office et al., 2025). However, this participation, while high in proportion to the rest of the country, is still a small portion of the population (17%).

Social networks have shown many positive outcomes in Vermont. Community groups created a resilience toolkit in response to the 2023 and 2024 floods (Resilience Hub, 2026). During these floods, volunteers in communities often were first responders and organized supplies and communication, essentially following a mutual aid model (Pintair, 2023). The toolkit is a result of the learning and experience from past floods in preparation for future floods.

Social cohesion can be strengthened by government support, such as a collaborative governance model that integrates top-down public resources, expertise, and legal authority with bottom-up neighborhood organizing, local expertise, and grassroots power (Vo, 2025). This can look like formal power-sharing agreements, funding, or technical assistance.

11.6.6 Public finance

Fiscal impacts of climate change

Climate change has fiscal impacts and can put public finances under strain. Following a climate shock, public expenditures, public revenue, and public borrowing costs are all affected but fiscal actions and outcomes differ based on a jurisdiction's income (Barrage, 2025). Areas with higher incomes or access to good credit see increases in public expenditure, while government spending is lower in poorer and credit-constrained areas (Barrage, 2025). Increased spending after a disaster aims to stimulate economic recovery—called counter-cyclical spending by economists. A report by the U.S. Chamber of Commerce estimates that every \$1 spent on resilience and preparedness can reduce post-disaster damage and cleanup costs by \$6 (U.S. Chamber of Commerce et al., 2024).

Federal support to states through intergovernmental transfers are key to recovery and include both direct disaster assistance (e.g., FEMA), and general social safety net transfers (e.g., unemployment insurance, public health expenditures; Deryugina, 2017). Preliminary analysis of costs associated with the July 2023 floods exceeded \$600 million, with the State of Vermont matching \$37 million (Reynolds, 2025; Vermont Agency of Administration, 2023). In Vermont, the direct federal disaster aid for 2023 was higher than 90% of the state's savings in 2024 (The Pew Charitable Trusts, 2025). A nationwide study on floods and hurricanes showed that high income counties in the U.S. increased their expenditures, received increased intergovernmental transfers, and did not see declining tax revenues while low-income counties did not significantly increase public expenditure, lower receiver

lower intergovernmental transfers, and experienced declining tax revenues (Miao et al., 2023). This indicates that low-income counties had to rely more on borrowing and were unable to sufficiently invest in disaster recovery, thus increasing long-term debt levels in low-income counties while lowering them in high-income counties (Miao et al., 2023). Local governments may see increasing trends in borrowing costs due to climate change disasters. Climate risk has overall increased yields of municipal bonds since the last decade, with yields higher for bonds backed by less diversified revenue sources and those that have a higher share backed by property taxes (Acharya et al., 2022; Auh et al., 2022; Barrage, 2025; Goldsmith-Pinkham et al., 2023; Jeon et al., 2024).

Financing recovery and resilience

Federal funds are important for financing disaster recovery and climate resilience, though there is risk because federal disaster declarations and allocations of funds are influenced by politics (see 11.5.1). Vermont has been among the states denied FEMA assistance in 2025 (Cotton, 2026) along with other federal social safety assistance (e.g., SNAP; Flanders, 2025). Affordable Care Act health insurance subsidies have decreased, increasing an individual's cost-burden and therefore vulnerability to climate and health risks (Ullman, 2025; see [Human Health 10.10](#)). Future federal support is uncertain, so it remains important for Vermont to prepare by increasing secure financing.

Dedicated funds play an important role in enabling implementation of climate adaptation and resilience actions. The Flood Resilient Communities Fund provided dedicated funding for voluntary projects that decreased flood risk and improved water quality, but funding has been allocated, and new applications are closed (Vermont Department of Public Safety Vermont Emergency Management, 2026). The Municipal Climate Recovery Fund, run through the State Treasurer's Office and Vermont Bond Bank, offers financing for flood-related expenses at a low (~1.3%) interest rate. The Treasurer's Office estimates the program will save taxpayers \$3.5 million (State of Vermont Office of the State Treasurer, 2023). It can also act as bridge while municipalities are waiting for FEMA funds. Another option is the Property and Casualty Intermunicipal Fund run by the Vermont League of Cities and Towns that helps its members buy down interest rates for flood-related loans. However, these two options do not meet demand. Throughout the state of Vermont, the need for sustained and dedicated financing for both adaptation and post-disaster recovery remains for municipalities, communities, and businesses.

In 2024, the state passed the Climate Superfund Act, which allows the state to recover funds for damages from fossil fuel companies for the climate impacts that they have caused in Vermont. The State Treasurer's Office is currently working on estimating the damages. The law has been challenged in a U.S. District Court by the Trump administration, the fossil fuel

lobby, and 24 states (Gaffney, 2025). The funds, if recovered, are mandated to be used for adaptation and resilience projects.

Additional economic activity in the state can also increase its tax base. Other potential sources of revenue for resilience include expanding taxation. Progressive income taxes and wealth taxes have been proposed by various groups. A second home tax has been proposed to increase revenue while addressing the housing crisis in the state.

11.7 TRACEABLE ACCOUNTS

Traceable accounts describe the confidence level—the degree of certainty in the scientific evidence—for each key message resulting from this chapter. This analysis is based on the U.S. Global Change Research Program guidance in the Fifth National Climate Assessment (USGCRP, 2023).

Confidence Level	Very high	High	Medium	Low
Evidence Level	Strong evidence: established theory, multiple resources, confident results, well-documented and accepted methods, etc.	Moderate evidence: several courses, some consistency, methods vary, and/or documentation limited, etc.	Suggestive evidence: a few sources, limited consistency, models incomplete, methods emerging, etc.	Inconclusive evidence: limited sources, extrapolations, inconsistent findings, poor documentation and/or methods not tested, etc.
Consensus Level	High consensus	Medium consensus	Competing schools of thought	Disagreement or lack of opinions among experts

Key message #1:

Vermont’s aging population, rural poor, unhoused residents, manufactured housing communities, and racial and ethnic minorities face the greatest exposure to climate hazards. Marginalized groups have the fewest resources to adapt to climate impacts. Reducing climate vulnerability requires addressing the underlying structural inequalities in housing, income, and healthcare that determine who is most at risk.

Description of confidence and likelihood	Very high
Description of evidence base	Ren et al., 2023; U.S. Climate Vulnerability Index, 2026
Major uncertainties	Demographic change

Key message #2:

Early warning systems for climate impacts require improvement. Expanding support to vulnerable populations must be conducted at all stages of the disaster cycle and include building partnerships with community organizations, nonprofits, and local leaders. There is a need to improve the clarity, relevance, and accessibility of disaster communication.

Description of confidence and likelihood	Very High
Description of evidence base	Soares et al., 2026; Trudeau et al., 2025
Major uncertainties	Social-technical capacity

Key message #3:

Vermont's small-business-dominated economy is heavily concentrated in climate-sensitive sectors including tourism, agriculture, and outdoor recreation. Repeated disasters can strain state and municipal budgets, decreasing fiscal stability. Integrating climate resilience planning into the private and public sectors is essential. Innovative policy measures are needed to finance climate action as well as increasing climate-friendly economic development.

Description of confidence and likelihood	High
Description of evidence base	Barrage, 2025; Vermont Climate Council, 2025
Major uncertainties	Geopolitical change

Key message #4:

Vermont's historic land use patterns have contributed to its climate vulnerability. The concentration of development in floodplains, combined with car-dependent sprawl, exposes communities to intensifying hazards while driving roughly 40% of the state's greenhouse gas emissions. Directing growth to higher ground, restoring natural buffers, and expanding affordable housing in compact communities are essential in creating resilient communities that can function as climate havens.

Description of confidence and likelihood	Medium high
Description of evidence base	D'Amico, 2025; Gourevitch et al., 2020, 2023
Major uncertainties	Social vulnerability, economic vulnerability, hazard exposure

Key message #5:

Stakeholders across sectors stressed the need to address climate change more proactively, which requires increasing capacity within government and through community-led efforts

(e.g., long-term recovery groups). Vermont's emergency management system is fragmented and under-resourced, and federal disaster support is becoming less reliable. Emergency response relies heavily on part-time municipal officials, and federal disaster assistance. Building durable state and regional capacity, with community-led organizations formally integrated into emergency planning, is critical.

Description of confidence and likelihood	High
Description of evidence base	Soares et al., 2026
Major uncertainties	Financial and technical resources

Key message #6:

Vermont's strong civic networks and community-led organizations are key to improving climate resilience. Strengthening social protection and investing in Vermont's civic infrastructure are essential to building equitable climate resilience. Structural measures are needed to address underlying inequalities. Examples include expanding affordable housing, strengthening worker protections, ensuring universal healthcare access, and building state-level safety net programs.

Description of confidence and likelihood	High
Description of evidence base	Tamasiga et al., 2024; Vermont Secretary of State's Office et al., 2025
Major uncertainties	Social political change, financial and technical resources

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