

State Hazard Mitigation Plan (SHMP, approved November 2018)

The State of Vermont understands that it is not only less costly to reduce vulnerability to disasters than to repeatedly repair damage, but that we can also take proactive steps to protect our economy, environment and most vulnerable citizens from inevitable natural hazard events.

MISSION: *To protect life, property, natural resources and quality of life in Vermont by reducing our vulnerability to climate change and natural disasters.*

GOALS:

- *Protect, restore and enhance Vermont’s natural resources to promote healthy, resilient ecosystems.*
- *Enhance the resilience of our built environment - our communities, infrastructure, buildings, and cultural assets.*
- *Develop and implement plans and policies that create resilient natural systems, built environments and communities.*
- *Create a common understanding of – and coordinated approach to – mitigation planning and action.*

Table 16: 2018 Hazard Assessment							
Hazard Impacts	Probability	Potential Impact					Score*:
		Infrastructure	Life	Economy	Environment	Average:	
Fluvial Erosion	4	4	3	4	4	3.75	15
Inundation Flooding	4	4	3	4	2	3.25	13
Ice	3	3	3	3	2	2	8.25
Snow	4	1	3	2	1	1.75	7
Wind	4	2	2	1	1	1.5	6
Heat	3	1	3	2	2	2	6
Cold	3	1	3	2	2	2	6
Drought	3	1	2	2	3	2	6
Landslides	3	3	2	1	2	2	6
Wildfire	2	3	3	3	2	2.75	5.5
Earthquake	2	3	3	3	2	2.75	5.5
Invasive Species	2	1	1	2	3	1.75	3.5
Infectious Disease Outbreak	2	1	3	2	1	1.75	3.5

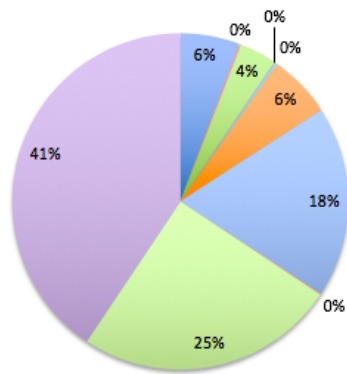
Overall, infrastructure challenges and vulnerability due to flooding, ice, wind, or snow events emerged as the most significant vulnerabilities

The northeast region of the country is the fastest-warming area of the contiguous United States and is warming at a rate 50% greater than the global average. Our region is predicted to experience increases in heat waves, downpours and flooding. High data points:

- more heat
- less cold days <0 degrees
- wetter in winter
- less soil moisture in summer (fire hazard and drought is increasing)
- more frequent and intense storms of all kinds, more landslides

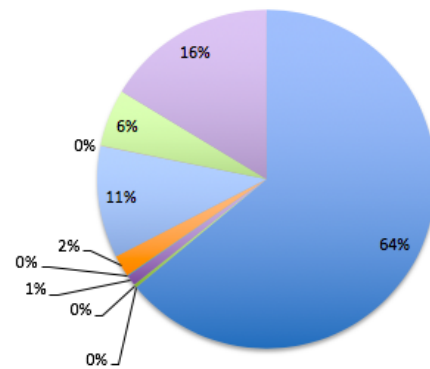
St Johnsbury Hazard History

Hazard Events in Caledonia County 1960-2013



Total events: 1,034

Hazard Damage in Caledonia County 1960-2013



Source: Special Hazard Events and Losses Database for the United States (SHELDUS)

Total damage: \$74,492,693

Extreme flooding is by far the **most costly** in terms of property losses, but events (winter weather, wind, severe thunder storms) that tend to impact us **most often** via extended power outages add up to 84% of what we’re experiencing day to day. Utilities are leading the way, planning and constructing microgrids, and offering battery storage.

The combination of extended power outages with extreme cold or heat, makes the events more deadly. Think how the design of development can help mitigate discomfort and avoid that misery.

From the VT Dept of Health webpages on climate:

Hot weather is the leading cause of weather-related deaths in the United States. The national weather alert system is set up to give alerts when the temperatures are above 90. But...

Vermonters are at greater risk for serious heat illnesses, and even death, when the statewide average temperature reaches 87°F or hotter.

Climate models from the VT State Climate Office predict the number of hot days reaching 87°F or warmer are expected to increase from about 7/year, experienced for the last 20 years, to 15-20/year by mid-century, 20-34 by end of century. Recent Vermont data showed that on days when the state average temperature reached at least 87°F:

- *there was **one additional death per day among individuals age 65 and older**, and*
- *there were **eight times more heat-related emergency room visits**.*

Vermonters are particularly at risk because we haven't designed the way we live to cope with increasingly hot weather that stays for a week or more. Many homes do not have air conditioning, and we thrive on working and playing outside during the summer months. Vermont also has a large population of older adults, who tend to be at higher risk for heat illnesses. **Vermonters are not be well-prepared when hot weather hits.**

There is so much we can do, in the orientation, design and construction of our built landscape, to help us become better prepared. Some of the best illustrations come from work in the 1970's (landscaping, solar orientation and design, roof overhang, semi-earth sheltered...), but we've made advances to apply. It increases affordability, on a life cost basis, to spend less on heating and cooling.

Adding language to the 10 criteria to better prompt District Coordinators and Commissioners to ask the questions to make this happen on the ground won't require any further study or appropriation. What happens in Act 250, even while only applying to 30% of development, has enormous influence on the rest. The standard requirements for low flush toilet, R-values for insulation, avoiding electric heat in the 1980's...all became standard development practice.



Suggested additions to the 10 criteria in the proposed legislation:

(1)(ii) The development or subdivision will employ orientation, design and materials ~~that are~~ sufficient to enable the improvements to be constructed, including buildings, landscaping, roads, and other infrastructure, to withstand, mitigate and adapt to the effects of climate change, including extreme temperature events, reasonably projected at the time of application.

...

(2) (E) Streams. A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other applicable criteria, the development or subdivision of lands on or adjacent to the banks of a stream will, whenever feasible, maintain the natural condition of the stream, stabilize the bank from erosion, as necessary, with vegetation, and will not endanger the health, safety, or welfare of the public or of adjoining landowners.

...

(4) Will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water, on steep or unstable slopes, so that a dangerous or unhealthy condition may result.

...

(9)(F) Energy conservation and efficiency. A permit will be granted when it has been demonstrated by the applicant that, in addition to all other applicable criteria, the planning and design of the subdivision or development reflect the principles of energy conservation and energy efficiency, including reduction of greenhouse gas emissions from the use of energy, incorporate building and landscape design to maximize passive heating and cooling opportunities, and incorporate the best available technology for efficient use or recovery of energy. An applicant seeking an affirmative finding under this criterion shall provide evidence that the subdivision or development complies with the applicable building energy standards and stretch codes under 30 V.S.A. § 51 or 53.

...

(L) Settlement patterns. ...

(i) will make efficient use of land, energy, roads, utilities, and other supporting infrastructure, including provision for self-reliance and access during disasters;

...

(10) Local and regional plans. Is in conformance with any duly adopted local or plan that has been approved under 24 V.S.A. § 4350, regional plan that has been approved by the Board under 24 V.S.A. § 4348, or capital program under 24 V.S.A. chapter 117 § 4430, and hazard mitigation plans adopted in accordance with FEMA requirements.