Town of Panton, Vermont

Single Jurisdiction All-Hazards Mitigation Plan

Final Town Adoption Date: */ /2024* *FEMA Approval Date:* */ /2024*

Panton Local Hazard Mitigation Plan 2024
Executive Summary

The Town of Panton began work on updating its All-Hazards Mitigation Plan in 2022. The Local Hazard Mitigation Plan Committee (LHMPC) was established with Panton's EMC, EMD, Planning Commission Chair as members and contracted consultant Addison County Regional Planning Commission (ACRPC) to manage the update. Town officials and citizens met in 2023 to conduct a hazards inventory and complete a risk assessment matrix, identify locations where hazards are known to the community, and identify potential mitigation projects associated with the hazards identified.

The committee identified the following hazards as their highest priority, based on probability, warning time, geographic impacts, property damage, and other concerns:

- **HazMat Transportation Accident**
- **Severe Lightning Storm**
- **Invasive Species**
- **Tornado or High Winds**
- **Severe Heat**

Three additional hazards received a high vulnerability score:

- **Infectious Disease Outbreak**
- **Severe Winter Ice or Snow Storm**
- **Accident or Fire affecting Solar Facility and/or Battery Storage**

For each high-vulnerability hazard type, the committee described previous occurrences and extent, current vulnerability, future probability, and identified mitigation goals and actions.

Identified Hazard	**Primary Mitigation Goal(s)**
Hazardous Materials Transportation Accident	Protect the health and safety of residents, and ensure that highway improvements result in safer conditions to reduce the potential for transportation accidents.
Severe Lightning Storm	Protect the health and safety of residents and critical infrastructure.
Invasive Species	Reduce the introduction and spread of invasive species in order to protect the health of residents.
Tornado or High Wind	Reduce overall vulnerability of residents and property to direct damage and the effects of potential power outages.
Severe Heat	Reduce resident's exposures to extreme heat conditions and ensure that residents have the knowledge and ability to protect themselves.
Infectious Disease Outbreak or Pandemic	Protect the health and safety of the public.
Accident or Fire affecting Solar Facility and/or Energy Storage System	Protect the health and safety of residents, first responders, and critical infrastructure.
Severe Winter Storm (Ice and/or Snow)	Ensure that essential services can function during and after winter storm events and minimize potential resulting power outages to reduce vulnerability of residents.

The committee documented mitigation activities undertaken since the 2018 hazard mitigation plan was adopted. The committee also developed a prioritized list of future mitigation actions and projects, with care taken to include only those projects which could be considered reasonable and feasible based primarily on capacity, cost, and political viability.

These mitigation projects included:

- **Hazardous Materials Transportation Accident:** Encourage conversion to alternate heating sources to reduce overall transport of fuels; evaluate hazardous road locations and consider potential realignments and lower speed limits; maintain awareness of VT Alert to notify nearby residents in the event of an incident.
- **Severe Lightning Storm:** Maintain lightning protection devices on Town-owned buildings, provide safety recommendation materials to private homeowners.
- **Invasive Species:** provide education materials to town residents to discourage spread of aquatic and terrestrial invasives; support the removal of invasive plant species that have phytotoxic properties (e.g. wild parsnip); support the removal and replacement of dead and dying trees killed by invasive insects or pathogens that threaten public safety.
- **Tornado or High Wind**: Support the removal and replacement of dead and dying trees that threaten town rights-of-way; encourage GMP to bury power lines when possible; require installation of "hurricane clips" on all new mobile home installations.
- **Severe Heat:** Adopt and update Hot Weather Emergency Response Plan as an annex to the annual Local Emergency Management Plan (LEMP); maintain facilities and supplies at Town Hall so that it can be used as a local cooling shelter; coordinate with Vergennes authorities to provide a regional shelter if needed. Maintain and improve Arnold Bay beach as an outdoor cooling site for the public.
- **Infectious Disease Outbreak:** Work with VT Department of Health to disseminate health information and protective supplies; adopt and update a town Continuity of Operations Plan.
- **Accident or Fire affecting Solar Facility and/or Battery Storage**: Work with GMP to provide regular trainings to local fire departments; Maintain awareness of VT Alert to notify nearby residents in the event of an incident.
- **Severe Winter Storm:** provide education materials to town residents about emergency supplies and preparation measures; Support continued development and expansion of GMP "Micro-Grid" via back up batteries and new distribution line from their 5MW solar array and Energy Storage System; maintain facilities and supplies at Town Hall so that it can be used as a local warming shelter and coordinate with Vergennes authorities to provide a regional shelter if needed.

A Hazard Mitigation Plan is necessarily dynamic. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The hazard mitigation plan should be reviewed by all new town officials and revised and updated in its entirety every five years.

The Town of Panton should monitor and evaluate its hazard mitigation goals, strategies and actions annually as the Town Budget is created and Local Emergency Management Plan is updated. In updates of the Municipal Plan by the planning commission, the concepts, goals and strategies from this hazard mitigation plan should be incorporated and used to inform the development of municipal strategies as the Town Plan is updated by the Planning Commission.

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1. Planning Process

Requirement 44 CFR § 201.6(c)(1)
(Document the planning process)

1.1. Current Plan Development Process

The Town of Panton received a Hazard Mitigation Assistance grant from FEMA in 2022. The town issued a Request for Proposals on September 14, 2022. Addison County Regional Planning Commission (ACRPC) was selected as a consultant to update the Local Hazard Mitigation Plan (LHMP) and submit it to FEMA for approval.

The Town of Panton Selectboard confirmed their intent to work through the process of writing an All-Hazards Mitigation Plan at a meeting of the Town Selectboard on **January 9, 2023**. After the confirmation of funding availability, the Selectboard further showed their support of the plan by appointing the following residents of Panton to a Local Hazard Mitigation Plan Committee (LHMPC):

- Howard Hall – Panton Selectboard and Emergency Management Director
- Mary Rudd – Panton Planning Commission
- Bob Groff- Panton Emergency Management Coordinator (EMC)

The LHMPC met on **January 19, 2023** to review the Hazard Mitigation Plan components and requirements and to develop a strategy for outreach to Panton residents and other community stakeholders. At a **February 16, 2023** meeting, the committee completed a hazards inventory and risk assessment matrix to determine highest vulnerability hazards and locations. Following the February meeting, the committee reviewed hazard mitigation actions in the 2018 LHMP. Posters were created and displayed at Town Meeting Day for input and feedback. ACRPC reached out to other Panton officials and emergency responders in Vergennes for additional feedback on the hazards inventory and risk assessment. The committee met again on **March 16, 2023** to set overall mitigation goals, review existing policies, programs and resources, and to develop potential mitigation projects for the identified hazards.

The final plan draft was sent to the Town Selectboard on November 27 for review at their **December 11, 2023** regular meeting. Input on the draft plan was requested from the Town Selectboard and Planning Commission. The town posted the plan to its website, www.pantonvt.us, and to the Vergennes Front Porch Forum to encourage community input and feedback. The draft plan was sent also via e-mail to the town clerks of the surrounding towns of Addison, Vergennes, Ferrisburgh and Waltham for distribution to appropriate town officials on December 14, 2023 with a request for review and edits by January 10, 2024. The draft plan was sent to several other stakeholders. Several comments from the public and town officers were received and incorporated (See **Appendix 1**) and resent to the Panton Select Board on January 17.

After Select Board preliminary approval, the draft plan was forwarded to Vermont's State Hazard Mitigation Officer for comments and preliminary approval on January 24, 2024. Suggested edits were identified by the SHMO on **March 6, 2024**. Appropriate edits were made and the draft plan received selectboard approval before being sent back to the SHMO for a second review before being passed on to FEMA reviewers. Comments were received on **XXXXXDATE**.

Changes were made to the draft plan based on FEMA recommendations and an updated draft was completed on **XXXXXXXDATE**. Upon completion of this draft, the plan was returned to FEMA for Approval Pending Adoption (APA) status. Upon receipt of the FEMA APA, the resulting document was adopted by the Panton Selectboard on **XXXXXXXDATE**.

1.2. Opportunities for Public Involvement

Multiple opportunities for public comment were made available during the planning process:

- A planning committee was appointed from volunteers and town officers at an open meeting of the Town Selectboard.
- A set of posters with overview information about the Hazard Mitigation Plan and an interactive chart for community members to rank vulnerability priorities was displayed at Town Meeting, March 7, 2023. (Appendix 1)
- A copy of the draft plan and request for feedback/input was posted at the Town Office on December 14, 2023. The Town Clerk encouraged the public to read and comment on the draft plan via email and in-person interactions.
- The draft plan and executive summary were sent to the entire town using Front Porch Forum. Message can be found in Appendix 1.
- There are very few vulnerable/ underserved/ frontline communities in the municipality, but the Panton Community Church serves some of those populations with outreach activities and social events and represented their needs in comments.
- Meetings of both the Town Selectboard and the Town Planning Commission were open for public comment throughout the planning and draft phases of this plan. (No comments received)

Requirement 44 CFR § 201.6(b)(2) (Stakeholder Involvement)

1.3. Opportunities for Additional Comment

Additional opportunities for regional and state-level comments in the draft stage were provided throughout the planning process.

- A copy of the draft plan was posted on the ACRPC website www.acrpc.org for regional review and notice was given during the December 2023 ACRPC full commission meeting as to its availability. Commissioners were asked to review and pass along comments to (Andrew L'Roe) at ACRPC. Comments were received and incorporated.
- The December 2023 ACRPC newsletter included an announcement that a draft plan was available for public review and comment. That draft was posted in the ACRPC office and was available for public input during normal business hours with a comment sheet attached. No comments received.
- The neighboring Town Clerks of Ferrisburgh, Addison, Panton and the City of Vergennes were notified of the posting via e-mail on December 14, 2023. The clerks were asked to share the notice with the Selectboards, planning commissions and the general public. Comments were requested to be sent to Andrew L'Roe at ACRPC. No comments were received.
- All known organizations based in Panton were contacted for comment, as well as emergency response organizations based outside of the municipality. A full list of stakeholders contacted and that provided responses in Appendix 1.
- A copy of the draft plan was provided to the State Hazard Mitigation Planner for comments on 23 January 2024. Comments were received on 6 March 2024
- An updated copy was sent to the SHMP for submission to FEMA on XXXXXXXDATE.
- FEMA Region 1 staff was sent a draft for comment on XXXXXXXDATE

- FEMA reviewers returned the draft plan XXXXXXXDATE for further edits which were completed and the edited plan sent back. /FEMA indicated an "Approval Pending Adoption by the Town
- The Town of Panton adopted the approved plan on XXXXXXXDATE and received final approval from FEMA on XXXXXXXDATE.

Requirement 44 CFR § 201.6(b)(3)
(Review of existing plans)

1.4. Extent of Review

Throughout the plan development process information from the following documents and sources were incorporated into the plan either as data or to inform the committee's prioritization process:

- 2023 Local Emergency Management Plan and Hot Weather/Cooling Shelter Annex
- 2019 Panton Town Plan (support for the committee's prioritization process and Section 2 narrative)
- 2022 Addison County Regional Plan (goals related to public safety as well as energy and transportation resilience)
- 2023 State of VT Hazard Mitigation Plan (provided listing of statewide hazard concerns and background information)
- 2022 Report of the State Fire Marshall (provided data to inform structure and wildfire risks)
- Federal Emergency Management Agency, www.fema.gov (provided official data on declared disasters)
- The Vermont Weather Book by David Ludlum (provided historic accounts of disasters for Section 4.3
- National Climatic Data Center website (provided information for Section 4.3)
- FEMA FIRM dated 1986 (incorporated into maps and Appendix 3)
- VT Center for Geographic Information data layers (incorporated into map products)
- State of Vermont Tier II reports, 2020-2023 (reviewed for Section 4.3)
- Panton Annual Town Reports 2013-2023
- NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/) for previous hazard occurrence

2. Local Background

2.1. Community Background

The Town of Panton consists of an area of about 22 square miles and is bordered on the west by Lake Champlain, on the east by Otter Creek and the City of Vergennes, to the north by the Town and Ferrisburgh and by the towns of Waltham and Addison to the south. Panton is primarily an open landscape of pasture and cropland punctuated with corridors of forest land and remnant woodlands or woodlots.

Panton's position on the Champlain Valley floor substantially influences its climate. The western section of town is only five miles from the eastern foothill of the Adirondacks, (elevation 1000'-2000' above sea-level), and the eastern height of land is within 20 miles of the Green Mountains (elevations up to 4300' above sea level.). Panton is bordered on the west by a deep section of the lake (120' to over 200' deep in sections), which is 3 to 5 miles wide in this area.

The moderating influence of the Lake's warmer temperatures in fall keeps the valley floor more temperate, which extends the growing season to over 150 days—nearly a month longer than upland areas—adding to the areas' appeal as an agricultural setting. The United States Department of Agriculture Hardiness Zone Map (the map on which plant hardiness ratings are base) puts Panton in Zone 5b, which has an average annual minimum temperature of between -15° and -10°F. The Green Mountain range to the east induces orthographic cooling, creating frequent cloud cover in the region. The development of cloud cover in the Green Mountains often signals weather changes associated with changing frontal systems of low and high pressure.

There are two major stream systems in Panton: Otter Creek and Dead Creek. The bulk of Panton lands are in the Otter Creek Drainage Basin, which drains a total of 936 square miles in Vermont. The Dead Creek drains a 50 square mile area and is a significant deep rush and cattail marsh system that supports diverse animal species, notably migratory waterfowl.

The mountains to the west create a rain (moisture) shadow that keeps precipitation levels among the lowest in Vermont. Panton has municipal water service as part of the Vergennes-Panton Water District (VPWD), with the water pumping facility located in Arnold Bay. VPWD was established and began operation in 1972 with the construction of the Arnold Bay Treatment Plant in Panton. This facility, which serves the bulk of Panton, all of Vergennes, and smaller sections of Addison, Ferrisburgh, New Haven and Waltham was last upgraded in 2010. Since Lake Champlain supplies water for VPWD, total volume is not a concern, though the influx of invasive zebra mussels could threaten the intake pipes. Water quality is a concern, particularly with agricultural runoff increasing the frequency and severity of algal blooms in the Lake.

VPWD maintains several main distribution lines in Panton, with some neighborhoods and other specific end users extending the lines as private system extensions. VPWD water lines interconnect with Tri-Town Water (municipal water provider for Addison, Shoreham and Bridport), to serve as backup systems for each other in an emergency. A major waterline break, could halt water service, but the likelihood of a major break is low and VPWD has demonstrated their ability to address such matters effectively.

Population

Over the past 20 years, Panton's population demographics have changed only slightly, from a total of 682 with a median age of 41.6 in 2010, declining to 646 with a median age of 40.5 in 2020, mirroring the trends seen across Vermont. The Median household income is higher ($83,594) than the rest of Vermont ($67,674).

Development and Housing

With the road network relatively unchanged since the early 1900's, development has occurred almost exclusively along these routes, creating linear development patterns, almost exclusively residential in character. In 2022, there were 277 year-round housing units, including 262 single family dwellings, 12 mobile homes, and three multifamily dwellings. There are an additional 26 camps, nearly all along the shore of Lake Champlain and accessible from driveways off Lake Road. There is also a campground with more than 40 RV hook-ups located on Panton Road and at least five short term rentals (Airbnb's).

There is overwhelming support in Panton for maintaining its rural residential and agricultural pattern of development and the integrity of its existing natural resources, particularly lands along Dead Creek and Otter Creek. The state-owned Dead Creek Wildlife Management Area extends along Dead Creek from the south side of Panton and encompasses 350 acres of land and water. There is a historic village center in Panton where the Town Hall, Panton Community Church and a now defunct general store and gas station. which constitute the only commercial zoning district in town.

While the pattern of residential development will continue along the road network, more creative future development may allow "back lot" and clustered type of residential development, which will preserve the rural character, open spaces, and viable farmland. Establishing new zoning districts that allow smaller lot size should be considered for future town planning, as housing pressure is anticipated to increase. The existing development pattern in Panton has not changed overall vulnerability. Conserved and agricultural lands along the Dead Creek and Otter Creek have provided buffers from the impacts of flood events on structures that have impacted the region. Future changes in development will maintain these buffer areas and natural systems of hazard mitigation.

Public Infrastructure and Personnel

The historic Town Hall, located on a half-acre property on Jersey Street just south of Panton Four Corners is the municipal facility for the town and contains meeting spaces, a large hall, and the Town Clerk's Office. The town office is the primary emergency operations center, with the Vergennes-Panton Water Treatment Plant as an alternate. Panton's Town Hall and two locations in Vergennes have been designated as emergency shelters.

Panton has a modest road network with a total of 27 miles of roads. Route 22A, which is a Class 1 highway, is the major state route running north to south on the eastern side of town. There are 24 miles of Class 2 and Class 3 roads, and 2.8 miles of Class 4 roads in town. There are also several private roads in Panton. The Town Garage, which is situated on a six-acre lot on Panton Road, was built in 2004 and should serve the town well into the future. There are two

privately-owned airstrips, both located near Lake Champlain on the southwestern corner of the municipality, at 374 Staton Drive and 490 Shadow Glen Drive.

In addition to its elected Selectboard Chair serving as an Emergency Management Director (EMD), Panton has an appointed Emergency Management Coordinator (EMC) to ensure the town is prepared for potential disasters or emergencies. Due to the limited capacity to deal with a disaster in the town of Panton, assistance would be expected from outside sources in much the same way that fire, rescue, and police services are provided.

Regional Services

As a small rural community, the town of Panton relies on its neighbors and the state for many services. The demands for these services vary from year to year, but remain relatively small because of the town's population.

In 1959 the five municipalities of Panton, Vergennes, Ferrisburgh, Waltham, and Addison formed the Union High School District #5, now the Addison Northwest Supervisory District. Panton students now attend the Union High School located in Vergennes.

The town has an agreement and contract with the **Vergennes Fire Department** for fire protection throughout Panton. Response to Panton fires has always been timely and effective. Panton residents serve on the VFD. Panton also has a Fire Warden who issues permits for burning and promotes adherence to State Fire Regulations and accepted safety practices.

Panton is served by and regularly supports the **Vergennes Area Rescue Squad**, which provides rescue coverage to eight communities in Addison County. Panton residents volunteer with the Rescue Squad. Panton residents use the Porter Medical Center in Middlebury for medical and emergency services, as well as The University of Vermont Medical Center in Burlington.

The town has an annual contract with the **Addison County Sheriff's Department** to provide various law enforcement services, particularly enforcement of posted speed limits. The Town has requested that the Sheriff’s Department have a more visible presence versus traffic violations/tickets, as well as additional patrols at the Arnold Bay parking lot during the season. current patrol hours are currently limited to 16 hours per month.

The **Vermont State Police** are the main law enforcement entity for Panton and much of Addison County. As Route 22A is a state highway, that route is under State Police jurisdiction. The State Police Headquarters for this region is located on Route 7 in New Haven. Due to the low crime rate in town, there is relatively little activity involving law enforcement. There is occasional police presence for traffic safety enforcement.

The **Vergennes Police Department** also contracts with neighboring towns to provide various law enforcement services. This is an option the town may consider if crime increases or services from the Sheriff’s Department become unavailable.

Energy Facilities

Green Mountain Power (GMP) provides electrical distribution for the Town of Panton through two substations: one located in that Vergennes serves the north and west areas of town and another in Weybridge that serves structures on the eastern side. No major VELCO transmission lines travel through Panton.

There are three commercial-scale solar facilities located within Panton. Two 500kW ground mounted photovoltaic arrays were installed by Green Lantern Development, at 1160 Panton Rd and 4530 Jersey St in 2016 and 2017.The largest, a 5.0 MW solar project was constructed on private property on the north side of 3369 Panton Road was installed in 2016. The development, construction and financing were managed by EDF Renewables for GMP. GMP has only five other solar arrays this size in Vermont. The solar array is accompanied by an Energy Storage System (ESS) composed of Tesla PowerPacks totaling 1 MW/4 MWh of storage, one of two such systems owned and run by GMP in Vermont.

To facilitate the solar installation, GMP upgraded the electric distribution lines and poles along Panton Road, relocating the above-ground infrastructure to the south side of the roadway. Relocating the poles removed them from the existing drainage infrastructure on the north side of the road, where they were being undermined by storm water and also inhibiting water flow.

GMP also invested in the creation of a “microgrid” at that Panton Road solar field. Solar power stored in the batteries will be tapped during power outages and store electricity also lowers costs for all GMP customers during peak energy times. The microgrid serves 50 customers who live on the stretch between the town hall and the town garage. GMP is in the process of expanding the Panton Road Microgrid to up to 900 customers, including critical infrastructure at the Panton-Vergennes Water Treatment Plant.

In conjunction with this project, GMP assisted the Town with energy-efficient upgrades at Town Hall that included installation of LED lights and electric heat pumps. In addition, a streetlight and Level 1 & 2 electric-vehicle charger were installed at the park-and-ride parking lot across from the Town Hall.

There are no in-ground fuel distribution systems in Panton. The Vermont Gas System (VGS) pipeline for Natural Gas ends at the Vergennes boundary. Local distribution by trucks owned by local and regional suppliers of oil and gas products provides fuel to residential, commercial, and agricultural users in the town.

Communication Utilities

There are no cell tower locations within Panton and wireless phone service in Panton is unreliable. with coverage along the Route 22A being somewhat better. The main coverage is AT&T and T-Mobile are the primary carriers and service originates from a transmitter located on a water tower in central Vergennes. While Verizon and US Cellular also provide service in this area, their customers have no reception within town boundaries. The other nearest transmitters are located in the Basin Harbor area of Ferrisburgh and Route 17 East near Otter Creek Road in Addison.

Local wired phone service in Panton is provided by Waitsfield & Champlain Valley Telecom and they operate a central switching center on Panton Road near Panton Four Corners.

Internet access is available in most locations in town through Waitsfield and Champlain Valley Telecom (WCVT), but speed varies considerably. High speed internet access over cable is not Available because there is no cable television infrastructure in Panton.

Fiber optic routes along Lake Road and Jersey Street provide 100/100 Mbps service (100 Mbps download speed and symmetrical download speed of at least 100 Mbps). In contrast, the central and eastern portions of town have only 4/1 Mbps (4 Mbps download speed and an upload speed of at least 1 Mbps), as do residences north of Panton Road on Lake Street. A few residences on Adirondack Lane, east of Route 22, lack even minimum 4/1 service. The Town of Panton joined Maple Broadband Communications Union District in October 2020. Because over 53% of Panton is already served via direct connection to fiber (optic) or coaxial cable, the CUD has not made Panton a priority for new cable installations.

Zoning Regulations

Requirement 44 CFR § 201.6(c)(3)
(existing land use and development ordinances)

The town of Panton enforces a set of Zoning Regulations, most recently adopted on July 11, 2017. The Town of Panton Zoning Regulations are intended to provide for orderly community growth and to further the purposes established in the Panton Town Plan. The regulations require that dwellings comply with all applicable State and Federal health and safety regulations. Where these regulations impose a greater restriction upon the use of a structure or land than are required by any other statutes, ordinances, rules, regulation, permit, easement or agreement, the provisions of these regulations shall control. The town does not have local building codes.

The Development Review Board (DRB) and Planning Commission (PC) are responsible for establishing zoning regulations. The DRB/PC also reviews subdivision requests and decides on exceptions to those regulations in the form of variances and conditional and special use permits. The Zoning Administrator receives, reviews, and issues standard building applications, and may only issue a required Certificate of Occupancy following inspection when a structure is completed.

The Zoning Regulations were updated in 2017 and contain a set of Flood Hazard Area Regulations to promote the public health, safety, and general welfare, to prevent increases in flooding caused by the uncontrolled development of lands in areas of special flood hazard, and to minimize losses due to floods. These regulations apply to all lands in the Town of Panton identified as areas of special flood hazard on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), dated September 18, 1986, and any revisions.

The Zoning Administrator implements the substantial improvement/substantial damage provisions of the town's floodplain management regulations by prohibiting substantial improvement and post-event repairs that will result in any increase in flood levels. All new construction and substantial improvements require the granting of a conditional use permit. the Development Review Board uses available base flood elevation data as criteria for approval. See Appendix 3 for maps and zoning language.

Land Use and Development Ordinances

Five distinct areas within the town have been identified with concomitant guidelines for future planning in these areas. These Future Land Use Areas include the:

1) **Ridgelands Area** representing the higher ground of Panton that contains a pattern of woodlands and forests, meadows and croplands, and incremental residential development.

2) **Shorelands Area** representing the lakeshore of West Panton. Limited future development is envisioned for this area, although several large parcels could be subdivided in the future. Eroding clay banks along the lakeshore is one notable issue, although long stretches have been artificially stabilized with rip rap, constructed sea walls, and gabions.

3) **Village Area** located at the intersection of Jersey Street and Panton Road that represents the historic settlement of "Panton Four Corners" and includes the Town Hall, a few residential structures, and The Panton Community Church. This is an area where increased density may be considered in the future, although the suitable soils to accommodate septic systems is a limiting factor.

4) **Rural Residential-Agricultural Area** characterized by extensive parcels of croplands and farmsteads, open spaces with some small sections of woodlots, and scattered low density residences along the roads of the area. The minimum lot size for much of this area is currently 10 acres, with some small areas of 5-acre zoning. The primary long-term land use desired in this area is ongoing large- and small-scale agriculture interspersed with low density development.

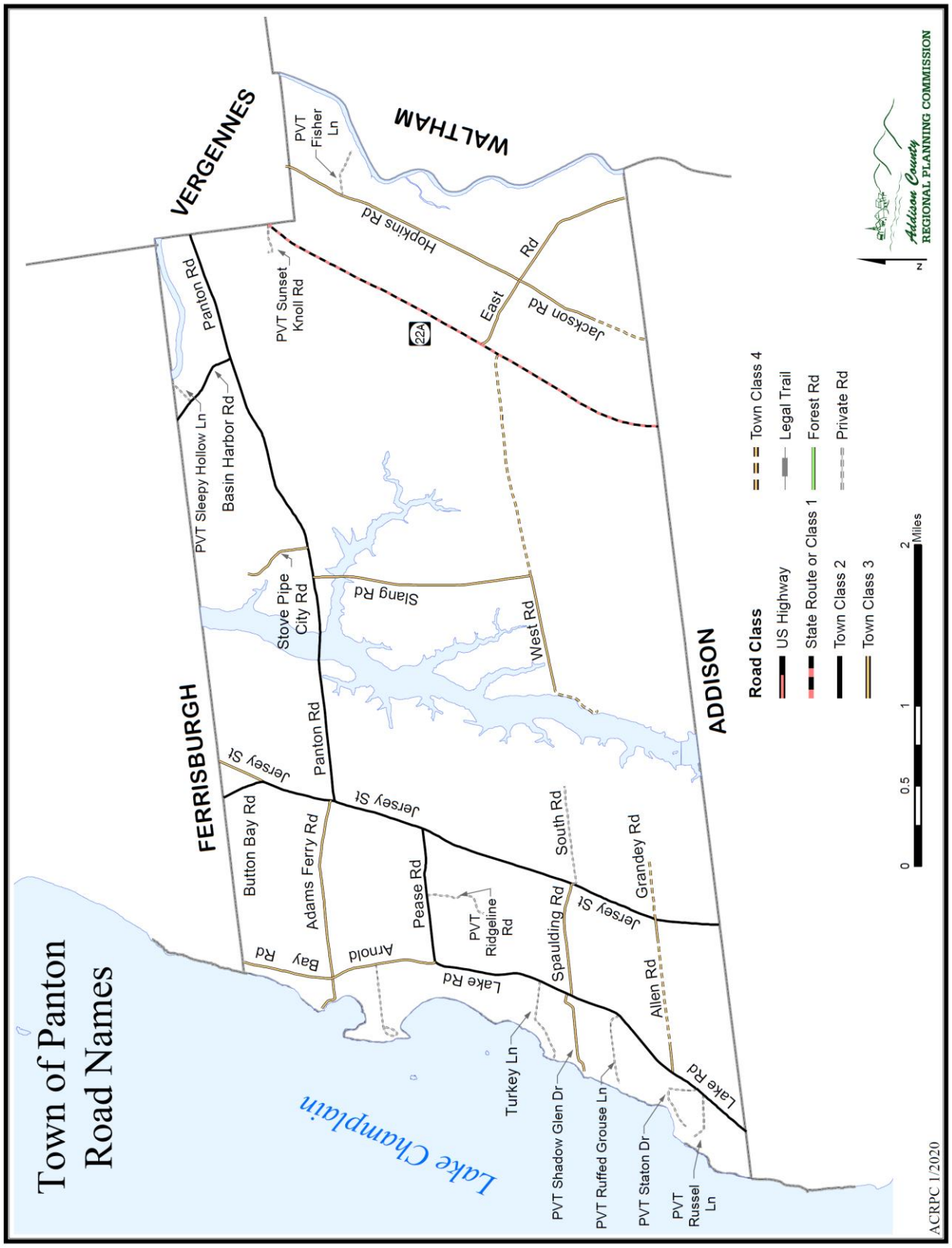
5) **Floodplain Area** representing the federally determined special flood hazard area 1% (aka 100-year) floodplain zones surrounding both Dead Creek and the western edge of Otter Creek. These areas are limited in size and contain other constraints for development and thus will remain sparsely developed.

The Town is a member in good standing of the National Flood Insurance Program since 1986 and as such has adopted zoning by-laws designating Flood Hazard Areas including associated regulations for administering those areas. In Panton, those floodplain regulations are administered by the Zoning Administrator as part of their regular duties. The Vermont FloodReady Website indicates that there are potentially two buildings currently in the FEMA mapped Special Flood Hazard Area (SFHA, aka 100-year floodplain). None of these is being insured through the NFIP and therefore there are no repetitive loss structures located in the Town of Panton.

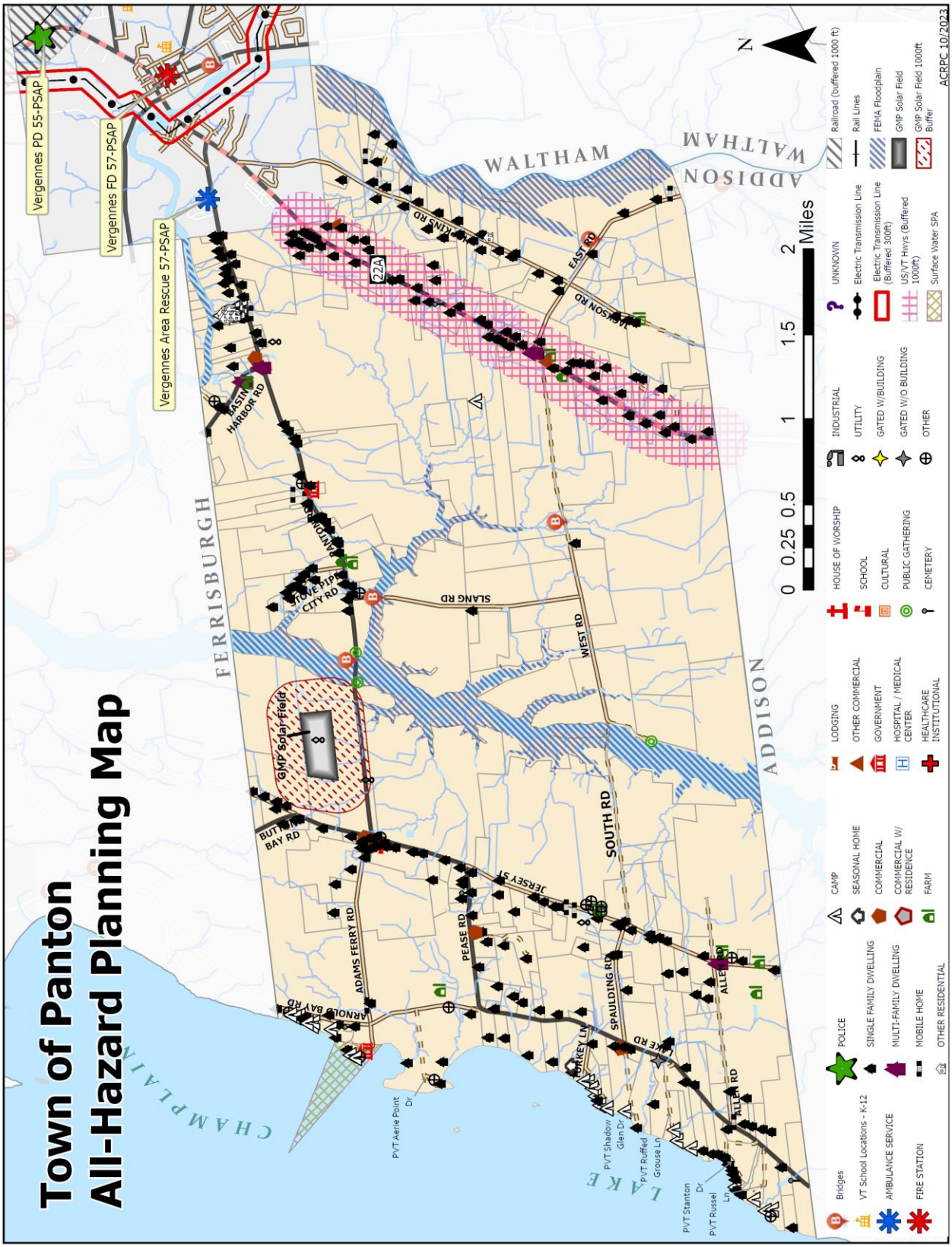
Requirement 44 CFR § 201.6(c)(2)(ii) (NFIP Repetitive Damage)	**Requirement 44 CFR § 201.6(c)(3)(ii) (NFIP Participation and Compliance)**

2.2. Community Maps

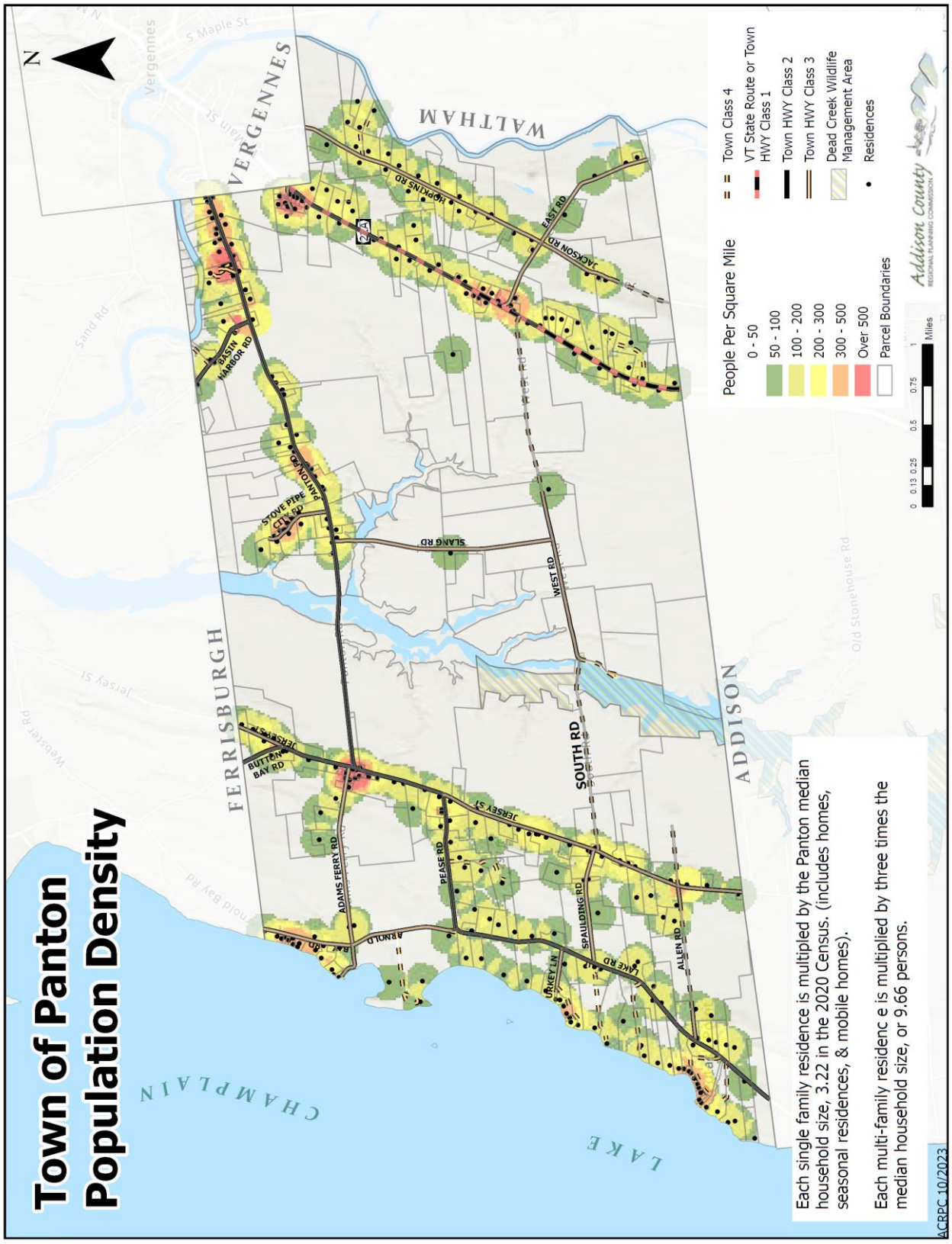
2.2.1. Municipal Road Names Map



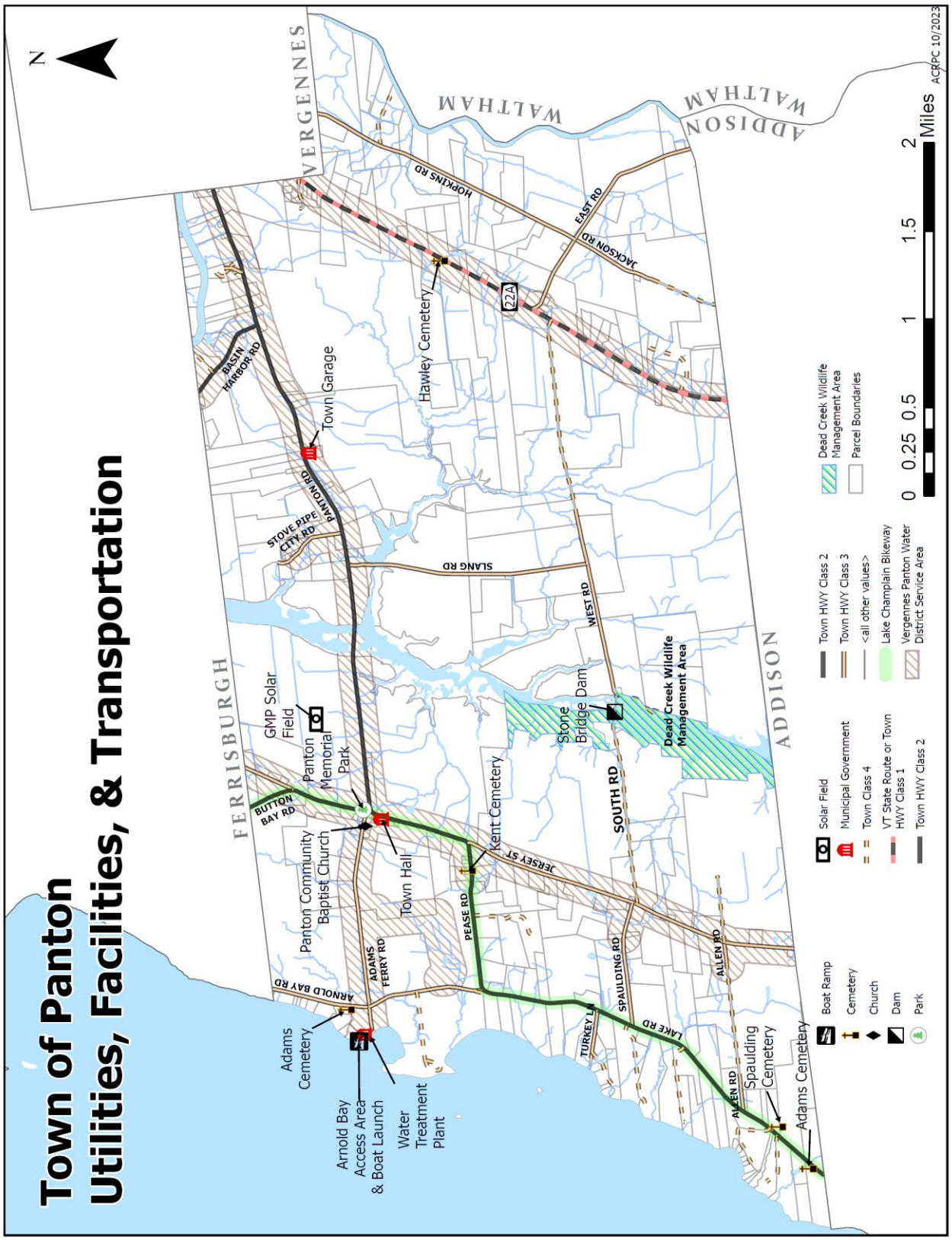
2.2.2. All-Hazards Planning Map



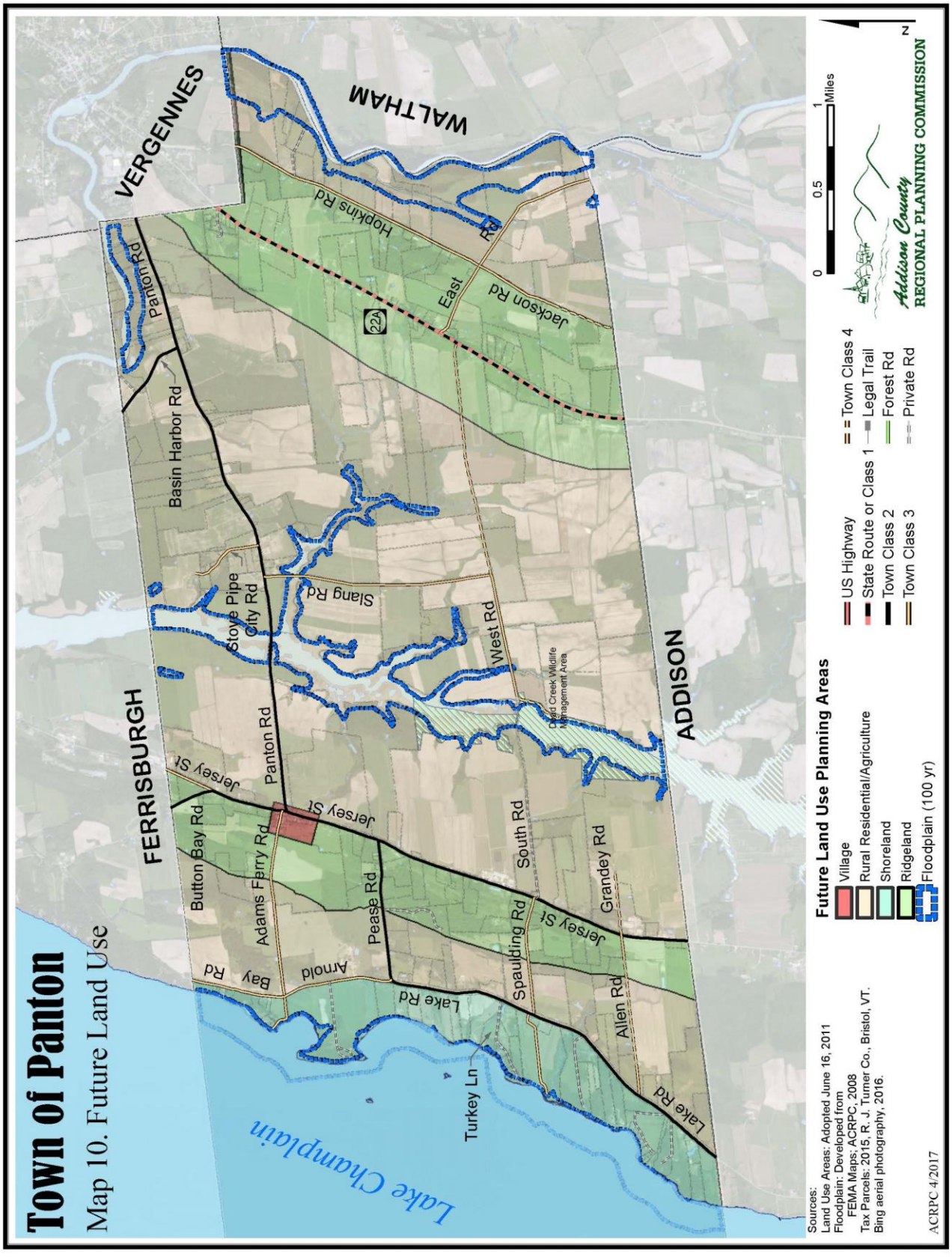
2.2.3. Population Density Map



2.2.4. Utilities, Facilities, & Transportation Map



2.2.5. Future Land Use Map



3. Existing Adopted Plans Which Support Hazard Mitigation

3.1. 2023 Panton Local Emergency Management Plan

Adopted annually and before May 1st each year and includes all required elements:

- Emergency Management (EM) Planners
- Municipal Emergency Operations Center (EOC)
- Municipal Resources
- Public Information and Warning
- Vulnerable Populations
- Shelters
- Local and Regional Contacts

Also includes several additional voluntary annexes:

- Emergency Services Personnel Guide for Pandemics
- Community Sheltering in Place
- Hot Weather Emergency Response Planning
- Maps of All-Hazards Planning, Road Names, and Fire Hydrant locations

3.2. 2019 Panton Municipal Plan and Land Use Plan Goals

Housing:

- The Town's residents will have safe, healthy, and efficient housing that is within their means.

Economy:

- Maintain the necessary and efficient infrastructure to support the reasonable economic development of the town.

Community Facilities and Services:

- Encourage safe and appropriate access to new residences for fire and rescue services.
- Our drinking water comes from Lake Champlain and therefore, the town should support activities, policies and land uses which protect rather than degrade water quality.

Energy and Land Use:

- Encourage the use and development of alternative energy, information technology, and energy conservation.

Transportation:

- Encourage safe and efficient travel for all modes of transportation (including walking and biking) throughout the Town of Panton on local and state highways.

Recreation:

- Promote safety and access for walkers and cyclists along Panton's roadways.
- Continue to improve lakeshore access.
- Improve water quality through measures such as phosphorus reduction, erosion prevention, and control of Zebra Mussels, Eurasian Milfoil, and other invasive species.

Natural Resources and Environment:

- Protect and enhance water quality both in groundwater and surface water.
- Discourage improper disposal of hazardous waste and participate in the Solid Waste District's hazardous waste programs.

Water Resources:

- Monitor and respond to any changes in flooding patterns as appropriate in order to protect Panton homes and resources.
- Monitor and respond to lakeshore flooding and slope erosion events and issues.
- Promote resiliency in general and low impact development strategies that employ green infrastructure techniques for flood and water quality protection measures.

Current and Future Land Use:

- Support Land Use planning initiatives which maintain and enhance the economic vitality of Panton and the overall physical and psychological health of its citizens.
- Promote safe, sensible, appropriate development patterns whenever and wherever possible, limiting strain on town services and expenditures.
- Locate several areas where more densely clustered, well planned, residential development could occur.

3.3. 2018 Addison County Regional Plan

Goals that support hazard mitigation:

- Work to restore and maintain stream equilibrium by developing and implementing river corridor plans.
- Reduce flooding and related damages through appropriate mitigation techniques.
- Encourage watershed-based cooperation and educate towns and the public about water quality and stream dynamics.
- Provide communities with the support they need to be proactive in reducing flood and erosion hazards by adopting appropriate zoning regulations to limit development in hazardous areas.
- Encourage proper maintenance and sizing of bridges, culverts, and other structures to accommodate flow from storm events and to mitigate flood hazards.
- Reduce the loss of life and injury resulting from all hazards.
- Mitigate financial losses incurred by municipal, residential, industrial, agricultural, and commercial establishments due to disasters.
- Reduce the damage to public infrastructure resulting from all hazards.
- Recognize the connections between land use, stormwater, road design/maintenance and the effects from disasters.
- Ensure that mitigation measures are sympathetic to the natural features of the region's rivers, streams, and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.
- Encourage hazard mitigation planning as a part of the Municipal Planning Process.
- Encourage municipalities and landowners to consider VT Agency of Natural Resources riparian guidelines for habitat and flood protection.

3.4. 2018 State of Vermont Hazard Mitigation Plan

Identified Goals and Strategies that support Hazard Mitigation:

- Protect, restore, and enhance Vermont's natural resources to promote healthy, resilient ecosystems.
    - Promote land management standards for State and private lands
    - Improve headwater storage
    - Reduce negative impacts of instream work
    - Improve flood resilience of agricultural lands
    - Promote drought resilience
    - Connect water quality, flood resilience and native habitat connectivity through co-benefits
- Enhance the resilience of our built environment—our communities, infrastructure, buildings, and cultural assets.
    - Locate new development outside of hazardous areas
    - Develop resilient design and construction standards
    - Incorporate flood resilience in transportation planning, engineering, and programming
    - Assess seismic vulnerability
    - Identify and protect vulnerable structures and critical infrastructure
    - Reduce structural vulnerability to landslide hazards
    - Protect cultural and historic resources
    - Establish a statewide conservation and buyout program
    - Improve dam resilience
- Develop and implement plans and policies that create resilient natural systems, built environments, and communities.
    - Ensure State programs support hazard mitigation goals
    - Develop solutions to fund hazard mitigation
    - Improve incentives for local hazard mitigation planning and action
    - Improve local hazard mitigation planning
- Create a common understanding of—and coordinated approach to—mitigation planning and action.
    - Improve local leaders' understanding of hazard mitigation
    - Increase public knowledge and literacy of hazards and mitigation
    - Improve community resilience and local engagement

4. Community Risk Assessment

Requirement 44 CFR § 201.6(c)(2)(i) (Description of all natural hazards)

4.1. Risk Prioritization Process

The Town of Panton's Hazard Mitigation Planning Committee reviewed the following hazards in its Hazard Inventory/Risk Assessment, examining each of the 2018 State Hazard Mitigation Plan assessed hazards:

- Inundation Flooding
- Fluvial Erosion
- Severe Snow Storm
- Ice Storm
- Tornado or High Winds
- Severe Cold
- Invasive Species
- Landslides
- Wildfire
- Drought
- Hail
- Infectious Disease Outbreak
- Severe Heat
- Earthquake
- Dam Failure

While completely human-caused hazards were removed in the most recent State of Vermont's 2018 hazard mitigation plan, the Panton committee felt that three additional hazards should be included in the assessment due to community concerns and potential impacts:

- Transportation accident that causes hazardous materials release
- Pandemic
- Accident or fire affecting solar facility and/or batteries

The Panton's Hazard Mitigation Planning Committee then assessed the town's vulnerability to each hazard for each of the following factors:

- **Probability,** or likely frequency of occurrence from historical trends and future projections
- **Warning**, or the projected time available to give notice to the majority of the population
- **Geographic impacts**, or how much of the population is expected to be impacted
- **Potential impacts**, or the potential severity of damages and disruption to lives and property.

Overall Vulnerability was then calculated by taking the total score of Warning, Geographic Impact, and Property Damage and multiply that total by Probability. This score was divided by 4 to increase the scoring legibility and rank hazards on a 12-point scale.

The LHMPC solicited community input through both an online survey and interactive display at Town Meeting Day to corroborate their risk assessment. The priority scores indicated by community members were very similar to those determined by the committee. Comments received supported including the additional hazards (See **Appendix 1**).

4.1.1 Hazard Inventory/Risk Assessment Parameters

Probability: Frequency of Occurrence

1= Unlikely	<1% in a given year
2= Occasionally	1%-10% probability in a given year
3= Likely	>10% but <100% in any given year
4= Highly Likely	100% probability in a given year

Warning: Time available to give notice to the majority of the population

1= More than 12 hours
2= 6-12 Hours
3= 3-6 hours
4= <3 hours (minimal)

Geographic Impacts: How much of the population is expected to be impacted

1= Isolated Locations/neighborhood	<20% of population impacted
2= Moderate impact	>20% and <75% of population impacted
3= Community-wide	>75% of population impacted within community
4= Region-wide	Level 2 & 3 impacts in surrounding communities

Potential Impact: Severity of damages and disruption to lives and property

1= Negligible	Isolated property damage, minimal disruption to infrastructure
2= Minor	Isolated moderate to severe property damage, brief disruption to infrastructure
3= Moderate	Severe damages at neighborhood level, temporary closure of infrastructure
4= Major	Severe damages town-wide, temporary to long-term closure of infrastructure

Vulnerability: Total score of Warning, Geographic Impact, and Property Damage, multiplied by Probability (and divided by 4 to increase legibility of scale)

Community Priority:

Highest Priority	Vulnerability score > 6
High Priority	Vulnerability score > 4 and ≤ 6
Moderate Priority	Vulnerability score > 3 and < 4
Low Priority	Vulnerability score ≤ 3

4.1.2 Town of Panton Risk Assessment Results 2023

New evaluation	Hazard	Hazard Impact	Potential Occurrence Location	Probability	Warning Time	Geographic Extent	Potential Impact	Total Vulnerability Score	Community Priority
				1(Unl)-4(High)	1(Long)-4(Short)	1(Little)-4(Wide)	1(Neg)-4(Maj)	Prob. x Other Factors (/4)	
	HazMat Transp. Accident	Hazardous Materials release	Along major truck routes	3	4	2	3	**6.75**	**Highest**
	Severe Lightning Storm	Fire or Electrical Damage to Property	High areas & ridges	3	3	3	2	**6**	**High**
*	Invasive Species	Injuries, Property Damage	Whole town	4	1	4	1	**6**	**High**
	Tornado or High Wind	Property Damage & Power Outage	Whole town	3	3	2	2	**5.25**	**High**
*	Severe Heat	Injuries, Loss of Life	Whole town	3	1	4	2	**5.25**	**High**
*	Infectious Disease Outbreak	Mosquito-borne Illness, Pandemic	Whole town	2	1	4	4	**4.5**	**High**
	Accident or Fire affecting Solar Facility	Hazardous Materials release into Air	Area around GMP Energy Storage System	2	3	2	3	**4**	**High**
	Severe winter ice/snow storm	Ice or Snow, Widespread Power Failure	Whole town	2	1	4	3	**4**	**High**
*	Hail	Property and Crop Damage	Whole town	2	2	3	2	**3.5**	**Mod.**
	Wildfire	Structure Fires and Property Damage	Shrubby areas	2	3	2	2	**3.5**	**Mod.**
	Drought	Loss of Drinking Water, Crop damage	Farms and Residences served by private wells	2	1	4	2	**3.5**	**Mod.**
	Earthquake	Structure damage, injuries	Whole town	1	4	4	3	**2.75**	**Low**
*	Severe Cold	Injuries, Loss of Life	Whole town	1	1	4	2	**1.75**	**Low**
	Multiple Structure Fires	Structure damage, injuries, Hazardous Materials release		1	4	1	2	**1.75**	**Low**
	Ice Jams	Water damage and road closure	Along Otter Creek	1	2	1	1	**1**	**Low**
*	Fluvial Erosion	Water or Erosion Damage	Areas adjacent to rivers and streams	1	1	1	1	**0.75**	**Low**
	Inundation Flooding	Water Damage	Areas adjacent to Lake, Dead & Otter Creeks	1	1	1	1	**0.75**	**Low**
	Dam Failure	Structure damage, injuries	Otter Creek areas below Vergennes	1	1	1	1	**0.75**	**Low**
	Landslides	Structure damage, injuries	High ridges, along rivers and streams	1	1	1	1	**0.75**	**Low**

4.2. Risk Prioritization Results

The committee calculated the following hazards as the highest in terms of overall vulnerability

- HazMat Transportation Accident,
- Severe Lightning Storm
- Invasive Species
- Tornado or High Wind
- Severe Heat

Three additional hazards received a high vulnerability score:

- Infectious Disease Outbreak
- Accident or Fire affecting Solar Facility and/or Battery Storage
- Severe winter ice and/or snow storm

The vulnerability to three hazards (Earthquakes, Fluvial Erosion and Lakeshore Flooding) were downgraded due to changes in community prioritization and lack of vulnerability or (see Section 4.4). A full profiling of other hazards listed in the State Hazard Mitigation Plan was omitted based on lack of risk and lack of historical occurrence in the municipality.

4.3 Hazards: Location, Extent, Previous Occurrences, Future Probability and Vulnerability

Addison County has experienced just over a dozen federally-declared disasters over the past two decades (see Figure 1 and Table 1). Most of these have been due to severe storms and associated flooding.

The Town of Panton has avoided most of the physical damage and financial effects of these disaster events. The costliest storm events were flooding in spring 2011 (months prior to Tropical Storm Irene), and a snowstorm in March 2001. The town received some public assistance following these events, but the individual assistance damage threshold was not met.

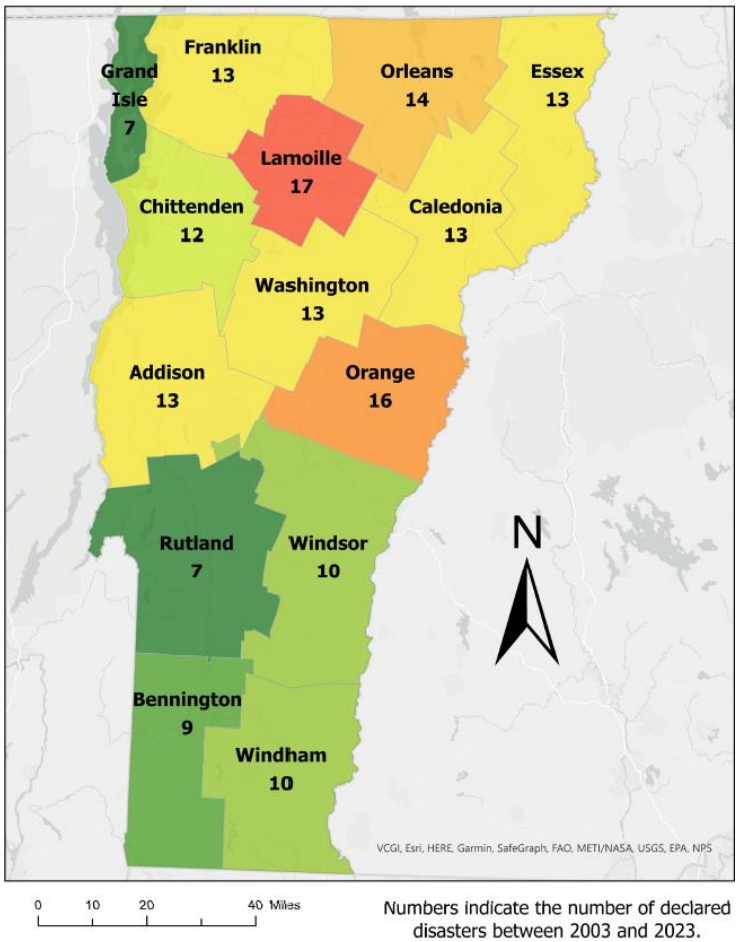


Figure 1. Federally Declared Disasters in Vermont by County, 2003-2023

Table 1. Federally declared disasters and costs affecting Addison County and Town of Panton

Year	Incident Date	Description	Declaration #	County Cost	Panton Cost
2023	Jul 7- 21, 2023	Severe Storms, Flooding, Landslides, and Mudslides	DR4720	Unavailable	Unavailable
2022	Dec 22- 24, 2022	Severe Storms and Flooding	DR4695	Unavailable	Unavailable
2021	July 29 - July 30, 2021	Severe Storms and Flooding	DR4621	Unavailable	Unavailable
2020	Jan 20, 2020 - May 11, 2023	Vermont COVID -19 Pandemic	DR4532	Unavailable	$8451.27 (Payroll) $4324.76 (Emergency Management)
2019	April 15, 2019	Severe Storms and Flooding	DR4445	Unavailable	Unavailable
2019	October 31- November 1, 2019	Severe Storms and Flooding	DR4474	Unavailable	Unavailable
2017	Oct 29 - Oct 30, 2017	Severe Storms and Flooding	DR4356	Unavailable	Unavailable
2017	June 29 - Jul 1, 2017	Severe Storms and Flooding	DR4330	Unavailable	$0.00
2015	June 9, 2015	Severe Storms and Flooding	DR4232	$893,310.63	$0.00
2015	December 9 - 12, 2014	Severe Winter Storms	DR4207	$184,715.05	$0.00
2012	May 29, 2012	Severe Storm, Tornado and Flooding	DR4066	$172,847.70	$0.00
2011	August 26-September 2, 2011	Hurricane Irene	EM3338	Unavailable	$0.00
2011	August 27-9/2/2011	Tropical Storm Irene	DR4022	$1,175,911.20	$0.00
2011	April 23- May 9, 2011	Severe Storms and Flooding	DR1995	Unavailable	$38,001.87
2008	June 14-17, 2008	Severe Storms and Flooding	DR1778	$1,114,515.70	$0.00
2008	July 21-August 12, 2008	Severe Storms and Flooding	DR1790	$2,273,481.42	$0.00
2004	August 12- September 12, 2004	Severe Storms and Flooding	DR1559	$430,551.00	$0.00
2001	March 5-7, 2001	Snowstorm	EM3167	$138,333.08	$2,542.55
2000	July 14-18, 2000	Severe Storms and Flooding	DR1336	$738,127.27	Unavailable
1998	January 6-16, 1998	Ice Storms	DR1201	$662,388	Unavailable
1998	July 17-August 17, 1998	Severe Storms and Flooding	DR1228	$2,146,484	Unavailable
1996	January 19- February 2, 1996	Storms, Flooding	DR1101	$130,529	Unavailable
1993	April 24- May 26, 1993	Flooding, Heavy Rain, Snowfall	DR990	$17,639	Unavailable
1989	August 4-5, 1989	Severe Storms, Flooding	DR840	$31,033	Unavailable
1977	September 6, 1977	Drought	EM3053	$ Unavailable	Unavailable
1976	August 5, 1976	Severe Storms, High Winds, Flooding	DR518	$ Unavailable	Unavailable
1973	July 6, 1973	Severe Storms, Flooding, Landslides	DR397	$ Unavailable	Unavailable

Requirement 44 CFR § 201.6(c)(2)(i) (Hazard information- Location, Extent, Previous Occurrences)
Requirement 44 CFR § 201.6(c)(2)(ii) (Hazard Impacts, Vulnerability)
Requirement 44 CFR § 201.6(c)(d)(3) (Development in hazard-prone areas)

The following hazard types have been identified, evaluated, and listed in order of priority as identified by the Panton Hazard Mitigation Committee as shown in their risk assessment: HazMat Transportation Accident, Severe Lightning Storm, Invasive Species, Tornado or High Wind, and Severe Heat. Other hazards identified in Vermont's state hazard mitigation plan did not rise to the same level of concern by the local planning committee. Hazard types are listed in their order of priority with highest perceived vulnerability described first.

4.3.1 HazMat Transportation Accident (Vulnerability Score 6.75)

Location

There are no sites in town that have sufficient types and/or quantities of hazardous materials to require Tier II reporting. There are several local farms that likely store fuels in quantities which might require reporting.

Highway accidents could result in a release of hazardous materials. Locations of concern are identified in the section on Highway Accidents. Since petroleum in the form of home heating oil is transported regularly, any town highway or residence could become of a spill site either as a result of an accident or during delivery. Route 22A is a major route for fuel and gasoline transport for the western part of Vermont.

Highway accidents are possible along all town highways but occur more frequently along Route 22A as it passes through the eastern portion of Panton. This highway has an Average Annual Daily Traffic (AADT) count of more than 5,100 trips per day through Panton and is one of the highest use highways in Addison County. Route 22A is the preferred truck route along western Vermont to access Chittenden County to the north because of its relatively straight path and the lack of congestion along much of the route. About a mile north of the Panton/Vergennes line, Route. 22A joins the highly travelled US Route. 7.

Just prior to the Vergennes line, the wide-open farm fields begin to rapidly give way to a more densely developed area. Many accidents occur in this transition zone due to the speed limit dropping from 50 mph to 30 mph as vehicle enter the City of Vergennes.

Panton Road and Lake Road are the most heavily travelled town roads and accidents have occurred along each. The intersection of Panton Road with Basin Harbor Road and Panton Road where it crosses Dead Creek were identified as historical accident locations. Various 90-degree turns as traffic follows Panton Road to Jersey Street to Pease Road and onto Lake Road were also identified as known accident locations. Each of these intersections pose a high risk to drivers unfamiliar with this route or when there is reduced visibility.

Extent

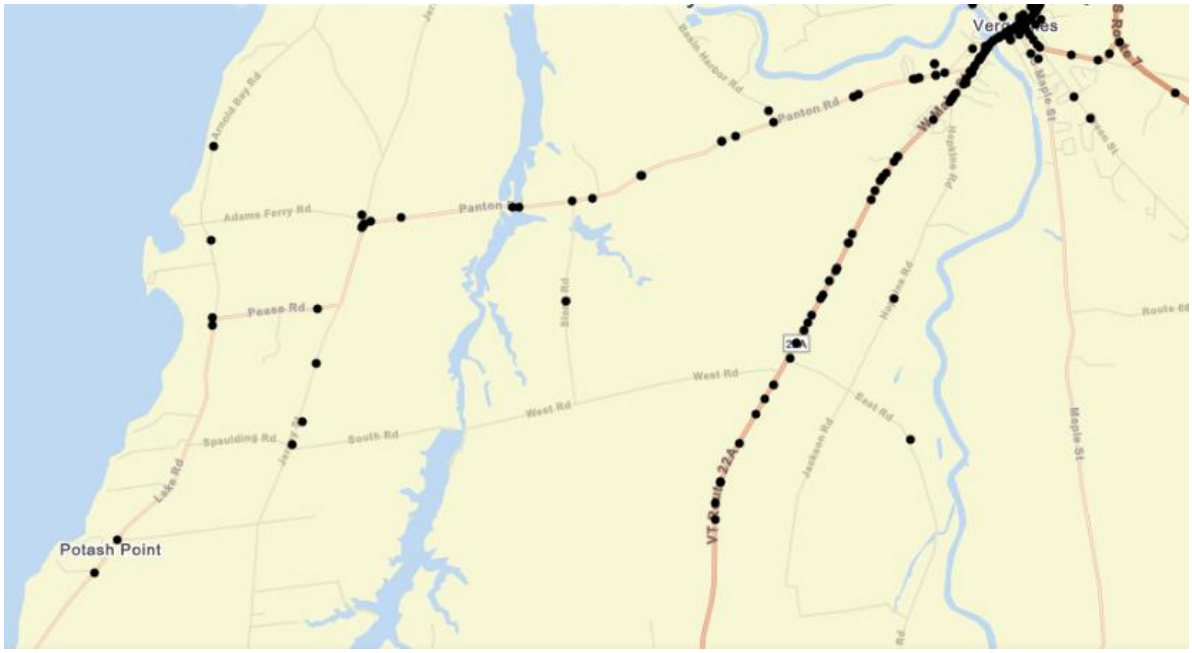
The highest risk of hazardous material accidents comes from truck traffic on Route. 22A due to both the volume and types of cargo being carried. The majority of gasoline and fuel oil delivered to northwestern Vermont by truck travels Route 22A from Albany, NY. to Burlington and points north. A fuel truck rollover in other vehicles could result in fire, environmental damage, and road closure for hours, days, or multiple days. This could potentially detour traffic to Jersey Street and Panton Road through the village and other residential areas.

A possible impact area was created by superimposing a 1000-foot buffer over state highways and all Class 1 and Class 2 roads in Panton t should a large hazardous material spill occur. A total of 61 structures, primarily residential, could be impacted should an incident with a vehicle carrying hazardous materials occur. A spill or other incident could impact essential facilities including Panton Town Hall and the Vergennes/Panton Water District Pumping Station at Arnold Bay.

Previous Occurrences:

No large-scale hazardous materials spills have occurred in Panton, though numerous incidents have occurred elsewhere in the region and state. Route 22A through Panton is a major north-south truck route and is the only place in Panton with documented heavy truck crashes in the last 20 based on Vermont Agency of Transportation (VTrans documentation).

Figure 2. Panton area total vehicle crashes, 2013-2023



VTrans Total Crash Data, 1/2013-11/2023 (http://apps.vtrans.vermont.gov/CrashPublicQueryTool/)

Future Probability:

Truck traffic is expected to increase as consumer demand for goods coupled with fewer local retail outlets drives more online shopping and door-to-door delivery. The State of Vermont's 2022 Comprehensive Energy Plan (CEP) calls for the transition of both commercial and private vehicles from gasoline to electric engines which may reduce the need for fuel transportation.

Vulnerability:

The Vergennes Fire Department is trained in hazard materials response, but entire State of Vermont is highly dependent on the limited resources of the State's HazMat team. Highway alignment and improved vehicle design are increasing highway safety and reducing the risk of accidents. Panton currently relies on signage and speed limit enforcement to mitigate the number of accidents and will continue these practices until there is will and funding to re-align local roadways.

The only northern crossing of Route. 22A is a bridge over Otter Creek in Vergennes. An accident that blocked or damaged the bridge would add 15 miles and approximately 20 minutes to a trip from Panton town center to downtown Vergennes, where the closest responding Fire Department and many other services are located.

Hazardous Materials transportation accidents are considered the **HIGHEST PRIORITY** for the Town of Panton, with an overall vulnerability score of 6.75 determined. Due to the risk to life and property represented by this hazard, the Town expends considerable resources attempting to make its roads as safe as possible within a restricted budget.

4.3.2 Severe Lightning Storm (Vulnerability Score 6)

Location:

Severe storms which include lightning along with wind and rain events are a common occurrence in Panton during summer months. While unpredictable, lightning tends to be drawn to exposed areas of higher elevation or where there are sudden increases in elevation. Areas where elevation and ledge have resulted in more frequent lightning strikes are located along Rte. 22A and the north-south ridge that runs between Jersey Street and Lake Road. Committee members living near the Lake Road ridge recounted multiple storms with several lightning strikes each.

Lightning fatalities are most commonly associated with water-related activities such as fishing, boating, and swimming. Given Panton's location along the shore of Lake Champlain and the lake access at Arnold Bay, victims are most likely to be located on the water. Another common strike location is at power line transformers.

Extent:

Based on data collected by NASA satellites between 1995 and 2002 there were between 4-6 strikes per square kilometer in western Addison County each year. each year. These numbers would extrapolate into between 225 and 350 lightning strikes per year.

Lightning strikes routinely cause fires to trees along ridge tops in Vermont and less commonly start fires in structures. Fires associated with lightning strikes to inhabited buildings occur fewer than once every five years on average. More common is loss of power and damage to electronic equipment in homes where there has been a proximity strike. Anecdotally, there are multiple reports each year of electronic equipment unprotected by surge suppressors which are damaged by lightning strikes. Generally, these homeowners file insurance claims for damages and total annual damages in the entire community likely do not exceed $10,000.

Previous Occurrences:

The National Lightning Safety Institute has recorded only three known fatalities due to lightning in Vermont between 1990-2003.

Given the estimated numbers of lightning strikes in Panton, unreported strikes on homes and other structure that resulted fire are likely. In August 2023, a lightning strike at the Whispering Pines campground on Panton Road received a lightning strike that blew off electric meters, ignited a fire affecting at least three housing units, and required residents to evacuate.

Energy meter that caught fire from Whispering Pines lightning strike, 2023

Future Probability:

Storm frequency and severity are predicted to increase which would likely cause more lightning strikes. The effect of strikes may be mitigated by the use of fire-resistant materials in new construction.

Vulnerability Summary:

Panton's susceptibility to lightning strikes seems to be relatively stable. The use of lightning rods has historically protected buildings from lightning-caused fires but these have fallen out of favor in recent years due to increased fire protection capability. The perceived risk of lightning strike in the community is relatively unchanged.

A lightning strike in the traditional village center along Jersey Street would likely cause the most disruption to the public, particularly if Town Hall or the Panton Community Church were damaged or destroyed.

The community risk rating for a severe Lightning Storm is evaluated as 6.0 and is considered **HIGH PRIORITY.**

4.3.3 Invasive Species (Vulnerability Score 6)

Invasive species are non-native introductions to an ecosystem whose presence causes or is likely to cause economic or environmental harm or harm to human health. invasive species can overwhelm native species and their habitats, forcing the native species out due to their ability to outcompete native species in their natural environments without the threat of a predator that can keep their populations in check. Invasive species are considered the second greatest threat to global biodiversity.

The State of Vermont has a long history of invasive species infestation in several categories, including:

Aquatic Species

- Zebra Mussel
- Eurasian and Variable-Leaf Watermilfoil
- Water Chestnut

Forest Pests

- Emerald Ash Borer
- Hemlock Woolly Adelgid*
- Asian Long-horned Beetle*

Arbovirus-Transmitting Arthropods

- Asian Tiger Mosquito (*Aedes albopictus*)*
- Asian Longhorned tick*

Disruptive Terrestrial Plants

- Japanese Knotweed
- Common Reed (Phragmites)
- Purple Loosestrife
- Garlic Mustard
- Buckthorn

Phototoxic Terrestrial Plants

- Giant Hogweed
- Wild Parsnip
- Wild Chervil

Tick Increasing Plants

- Japanese Honeysuckle
- Japanese Barberry

*Not yet present in Addison County

Aquatic Invasive Species pose a serious threat to lakes, ponds, and rivers by choking out swimming holes and crowding out beneficial native species, drastically impacting aquatic foodwebs and limiting fishing, or covering lake bottoms with a layer of sharp shells.

Forest Pests are insects that cause irreversible impacts on tree health and biodiversity.

Arbovirus-Transmitting Arthropods are a group of insects that transmit viral infections through their bites.

Disruptive Terrestrial Plants are invasive plants can change soil composition, change water tables, and disrupt insect cycles, negatively affecting native plant regeneration, agricultural crops, ecosystem function, recreation and wildlife habitat, and human health.

Phototoxic Terrestrial Plants are invasive plants whose sap can cause a chemical reaction that makes skin hypersensitive to ultraviolet sunlight if it makes direct contact with human skin and potentially cause serious skin burns.

Tick Increasing Plants are plants have proven to increase the incidence of Lyme disease by providing sheltered habitat that increases the abundance of small rodents, which act as hosts to the ticks that carry Lyme disease pathogens.

Location:

Invasive species are commonly introduced via travel routes, unintentionally brought into Vermont with the transportation of people and goods. As a result, many are found along roadsides and in waterways across the entire state.

Aquatic Species have spread throughout Lake Champlain along the western shoreline of Panton (Zebra Mussels, Water Chestnut, Milfoil, Alewives, etc.). A smaller subset of species have become established in Otter Creek and Dead Creek (Water Chestnut).

Panton contains relatively little forest cover susceptible to Forest Pest insects, in comparison to neighboring municipalities. Panton's largest forest blocks are located along Dead Creek and Otter Creek, and between Jersey Street and Lake Road. Large trees adjacent to Jersey Street and other roads and driveways in town could be impacted Parts of Panton are within the five mile "confirmed infested areas" of confirmed Emerald Ash Borer locations in Middlebury and Bristol.

Phototoxic Terrestrial Plants like Wild Parsnip are especially common in abandoned yards, farmland, and along roadsides and other disturbed environments. They spread by seed via waterways, wind, mowers, and wildlife.

Extent:

Invasive species have a variety of effects on humans and the environment so characterizing the extent of their spread is a challenge.

Forest Pest insects threaten more than 14 different species of trees in Vermont, including: maple, elm, horse chestnut, willow, ash, poplar, European mountain ash, hackberry, and hemlock.

Wild parsnip secretes a toxic sap that contains furanocoumarins, chemicals that make the skin extremely sensitive to ultraviolet (UV) rays. The toxic sap, in combination with sun exposure, can cause a severe skin reaction called phytophotodermatitis, which usually starts within 24 to 48 hours of exposure. The reaction can turn into a severe rash or blistering burn and lead to discoloration of the skin or photosensitivity that can last for years.

Previous Occurrences:

Because invasive species often spread over a long period of time and have dispersed effects, identification of hazard events concerning invasive species is difficult.

- The zebra mussel was discovered in Lake Champlain in the summer of 1993.
- The emerald ash borer was first discovered in Vermont in February 2018, and was detected in nearby Bristol (2019) and Middlebury (in 2021).
- Wild Parsnip was likely brought by early European settlers, but has escaped cultivation and populations have increased dramatically across the state in the last decade. In recent years it has been documented to cause 2nd degree burns to several individuals in parts of Vermont.

Future Probability:

Existing and new invasive species are expected to continue moving into Panton through human transport and by natural reproductive spread.

Phototoxic Terrestrial Plants like Wild Parsnip can form dense stands which outcompete native species and become self-sustaining populations that continue to expand if not eradicated.

Some mobile species like ticks and Woolly Adelgid are moving north from southern Vermont and are expected to continue moving as milder winter temperatures allow them to overwinter. The *Aedes albopictus* (Asian tiger) mosquito, which can carry and transmit Zika, dengue, and other arboviruses including West Nile Virus, has an estimated geographic range that includes southern Vermont and is anticipated to move into Addison County.

In addition to concerns over Vermont's ash tree population, northern hardwood species like maple, yellow birch and American beech are predicted to largely vanish in the State, replaced by tree species such as oak and pine that thrive in warmer, drier conditions. The changing climate is expected to lead to less available water, resulting in additional stress to existing trees, which will increase their vulnerability to pest invasion and disease.

Vulnerability Summary:

Warming temperatures and milder winters makes Vermont more vulnerable to insect borne diseases and increases the chance these diseases can overwinter. While not strictly invasive, this shift in species distribution and range could threaten human health in the state. As the global climate continues to shift rapidly rate, species better adapted for warmer climates will continue to proliferate, causing changes in ecosystem composition that could destabilize basic ecosystem functions. Monetary and health costs associated with the disturbances invasives cause will continue to increase.

Invasive species are considered a **HIGH PRIORITY** for the Town of Panton, with an overall vulnerability score of 6.0 determined.

4.3.4 Tornado or High Winds (Vulnerability Score 5.25)

High wind events can be the result of any of the following:

- **Wind Storm:** events without precipitation with gusts sustained at more than 31 mph for at least an hour or any gusts greater than 46 mph.
- **Hurricanes/Tropical Storms**: often result in high winds greater than 39 mph, along with inundation flooding, and fluvial erosion impacts.
- **Thunderstorm**: storms with precipitation, lightning, and/or hail, that can be compounded by downburst high winds potentially in excess of 80 mph.
- **Tornado:** a violently rotating column of air extending from a thunderstorm with wind speeds capable of reaching in excess of 250 mph.

Location:

High winds can affect the entire planning area. In Vermont, high winds are most often seen accompanying severe thunderstorms. In Addison County, these storms usually originate from the west, southwest, or south. Panton enjoys some protection from large storms coming directly from the west by the Adirondack Mountains and Lake Champlain, with the most common threat being squall line thunderstorms from the southwest. Waterspouts– a tornado that originates over water instead of land– are rare but can occur over Lake Champlain and move inland.

Because Panton is about 15 miles from base of the Green Mountains, it is less vulnerable to downslope windstorms and related hazards. Large-scale hurricanes affecting the entire region are infrequent because hurricanes typically lose wind speed as they move inland and downgraded to tropical storms by the time they reach inland Vermont.

Extent:

Wind-producing storms can range significantly in size and type. Wind storms and hurricanes can affect the entire state in a single event. Squall line thunderstorms move in a line or front that can exceed 100 miles in length, with the strongest rains and winds at the front of the storm. Thunderstorms can produce downburst winds that affect the land immediately beneath a storm. These downburst winds are called microbursts, which move outward from the base of a thunderstorm. Tornado damage paths can be more than mile wide and 50 miles long. Straight-line winds from thunderstorms are more common, but usually more limited in scale. (See Beaufort Wind and Saffir-Simpson wind scales in Appendix 4).

Previous Occurrences:

In Vermont, high winds most often seen accompany severe thunderstorms. In fact, straight-line winds are often responsible for most of the wind damage associated with a thunderstorm. These winds are frequently confused with tornadoes because they exhibit similar wind speeds and cause similar damage but the winds do not rotate as they do in a tornado.

While thunderstorms and associated hazards can occur anywhere and at any time of the year in Vermont; spring and summer are the most common times for severe thunderstorms. Tornadoes typically occur in Vermont between March and August.

Since 1970 across Addison County, NOAA has documented wind-damage from over 150 thunderstorms and only 3 tornadoes, primarily during the spring and summer:

	January	February	March	April	May	June	July	August	Septembe	October	November	December
Tornado	0	0	1	0	0	0	2	0	0	0	0	0
Thunderstorm & Wind	0	1	2	0	21	32	72	35	9	3	3	1

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

Tornadoes can occur in Addison County, but are rare. In July 2022 a storm system produced two tornado touchdowns just south of Panton; one in Addison (EF1) and one in Waltham (EF0). (See Enhanced Fujita Scale in Appendix 4). The tornadoes caused property damage, and uprooted and snapped several trees. The path length of the Addison tornado was 1 mile long and as much as 50 yards wide, while the second tornado path was 0.7 miles long and 25 yards wide. While extremely rare, in 1970 a waterspout moved from Lake Champlain to the southern part of Swanton, Franklin County where it struck a cabin and multiple injuries resulted.

Large-scale windstorms have affected wide portions of the state three times in the last decade: October 30, 2017, November 1, 2019, December 23, 2022. In each of these storms, strong winds affected all of Vermont's 14 counties, resulting in downed tree limbs, power outages, and uprooted trees which affected transportation routes. Panton's only NOAA-documented high thunderstorm winds causing ~$5,000 of property damage occurred on August 31, 1993.

Future Probability:

Wind events are considered **Highly Likely** in Vermont. The risk due to wind events is moderate for the built environment and minor for natural environment, people, and economy. Tornadoes are not common in Vermont. However, it is likely that as climate change accelerates, the area will see exacerbation of wind events such as hurricanes, tropical storms, and thunderstorms.

Vulnerability Summary:

People who live in rural, isolated communities like Panton are particularly vulnerable to windstorms. High winds can take down trees and power lines, resulting in blocked transportation routes, cut off electricity and telecommunication networks, and property destruction. Lack of electricity is life-threatening for those relying on electric life supports systems and electrical heating and cooling systems. In addition, isolated populations may have limited access to information and communication resources that could prevent injury or death.

High Wind events are considered a **HIGH PRIORITY** for the Town of Panton, with an overall vulnerability score of 5.25 determined.

4.3.5 Severe Heat (Vulnerability Score 5.25)

The frequency and intensity of hot weather is increasing in Vermont, resulting in greater numbers of heat-related emergency department visits and total deaths.

Location:

Heat waves occur across the entire state, but are generally slightly lower in higher elevation mountain communities, and slightly higher in lower-lying areas like Panton. During the summer, the lake moderates temperatures with cooling on-shore and off-shore breezes that keep some parts of town cooler than the more developed areas in the town and other communities that surround this part of the valley.

Extent:

A number of metrics demonstrate the extent of recent increase across the state:

- Days with a maximum temperature **above 95 degrees** Fahrenheit have increased from less than 1 per year (1950-2009) to **at least 2** per year (2010-2022)
- Days with a maximum temperature **above 90 degrees** Fahrenheit have increased from about 4 per year (1950-2009) to **more than 9** per year (2010-2022)
- Days with a **minimum temperature above 70 degrees** Fahrenheit have increased from about 2 per year (1950-2009) to **more than 7** per year (2010-2022)

Previous Occurrences:

Since 1970 across western Addison County, NOAA has seven documented heat events, primarily during July and August and all since the year 2006:

	January	February	March	April	May	June	July	August	Septembe	October	November	December
Heat Event	0	0	1	0	0	1	3	2	0	0	0	0

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

The March 2012 event saw record heat across all of Vermont with maximum temperatures 30° to 40° above normal. Some daily records that stood for more than 100 years were broken and several daily records were broken by 10° or more. The Winter of 2011-12 was atypical with temperatures that averaged 4°-5° above normal and snowfall that was 40-60 percent lower than normal. This combination caused snowpacks across the region to be well below normal or even non-existent by mid-March. The ski industry suffered significant revenue loss due to lack of snow, including early spring closures and the Vermont maple sugaring industry lost approximately $10M statewide.

From June 18-23, 2020 the second longest heatwave in modern history (1900-onward) occurred across portions of NY and VT. Temperatures exceeded 90° F for up to six consecutive days in portions of the Champlain Valley.

Future Probability:

Average temperatures in Vermont are projected to increase by an additional 3° to 12° F by 2100, suggesting that Panton can expect more frequent and harmful hot weather in the future. A number of NOAA projections demonstrate the probability of future temperature increases in the Champlain Valley:

- Days with a maximum temperature **above 95 degrees** Fahrenheit will increase from 2 per year (2010-2022) to **between 3 and 6 per year** (2035-2064)
- Days with a maximum temperature **above 90 degrees** Fahrenheit will increase from 9 per year (2010-2022) to **between 13 and 19 per year** (2035-2064)

Vulnerability Summary:

Despite Vermont's northern location, data indicates that Vermont residents experience heat-related illnesses at lower temperatures than residents of other regions. This is likely related to the infrequency of hot weather in Vermont, which has several impacts:

- Vermonters do not experience enough hot weather for their bodies to adapt to hotter conditions;
- Many Vermont homes are not adequately weatherized and do not have air conditioning;
- The State and local communities have not developed plans and policies needed to be prepared for hot weather;
- Adapting behaviors to stay safe during hot weather can be challenging for individuals;
- Vermont has a large population of older adults, who are at higher risk for heat-related illnesses.

The Vermont Department of Health has identified Panton as having a higher population vulnerability than the state average, due primarily to the percentage of "Adults 65 and Older Living Alone" in Panton. Other populations disproportionately impacted by heat can include outdoor workers and hobbyists with more exposure to hot conditions, populations that are particularly sensitive to heat exposure (older adults, young children, pregnant women, people that are overweight or have chronic medical conditions, people using drugs, alcohol, or some prescription medicines), and people with limited adaptation resources (living alone, unable to access community cooling sites, or unable to keep their home cool).

Between 2009 and 2019, there were an average of 104 heat-related emergency department (ED) visits per year and 12 heat-related deaths across the state.

Severe Heat events are considered a **HIGH PRIORITY** for the Town of Panton, with an overall vulnerability score of 5.25 determined.

4.3.6 Infectious Disease Outbreak (Vulnerability Score 4.5)

An infectious disease is caused by micro-organisms, such as bacteria, viruses or parasites. A vector-borne disease is an infectious disease that is transmitted to humans by blood-feeding arthropods, including ticks, mosquitoes, and fleas, or in some cases by mammals (e.g. rabies). An epidemic emerges when an infectious disease occurs suddenly in numbers above normal expectancy. Infectious disease outbreaks put a strain on the healthcare system, can cause continuity of operations challenges for local businesses, impact the economy, and interrupt daily life for everyone within a community. These outbreak incidents are a danger to emergency responders, healthcare providers, schools, and the public. Examples include Coronavirus 19 (COVID-19), influenza (e.g. H1N1), pertussis, West Nile Virus, and many other diseases.

The Vermont Department of Health has separated vector-borne and other infectious diseases into five threat categories:

Threat Classification	Disease
Diseases already present in Vermont that may be exacerbated by climate change	West Nile Virus
	Eastern Equine Encephalitis
	Lyme Disease
	Anaplasmosis
	Babesiosis
	Hard Tick Relapsing Fever
	Jamestown Canyon Virus
	Tularemia
	Powassan Virus
Diseases that may spread to Vermont even without contribution of climate change, whose spread to and transmission of Vermont could be exacerbated by climate change	St. Louis Encephalitis
	Western Equine Encephalitis
	La Crosse Encephalitis
	Ehrlichiosis
	Alpha-gal Syndrome
	Rocky Mountain Spotted Fever
Diseases with vectors that may spread to Vermont by the end of the century under a higher emission scenario	Dengue
	Zika Virus
	Chikungunya Virus
Diseases that have or may in the future have competent vectors in Vermont, but are unlikely to become established in Vermont despite a vector presence	Yellow Fever
	Malaria
	Chagas Disease
	Rift Valley Fever
Diseases that may be present in Vermont or may spread to Vermont in the future but whose link with climate changes expected in Vermont is tenuous.	Bartonellosis
	Rabies
	Hantavirus
	Leptospirosis
	Plague
	Valley Fever
	Anthrax
	Q Fever

2016 Vermont Climate Health Report

Location:

Infectious disease cases have been dispersed throughout Vermont and likely in Panton. Low population density in town may reduce the spread of respiratory disease.

Extent:

Infectious diseases come in a wide variety of types and have a broad range of effects. In most cases, only a few individuals are affected. However, more virulent infectious disease outbreaks have the potential to affect the entire community over a long period of time. Most recently, the COVID-19 pandemic that began in 2020 led to a complete disruption of daily life and municipal operations across Panton and the rest of Vermont.

Previous Occurrences:

Respiratory diseases have had the greatest impact and most widespread previous occurrences. Pandemic influenza, considered to be a global outbreak, spread quickly around the world and was observed in 1918, 1957, 1968 and in 2009 with the novel H1N1 strain. The 2009 H1N1 outbreak, though not considered a serious threat to Vermont, still affected some Vermonters. The great influenza epidemic of 1918 killed millions worldwide and would likely cause hundreds to thousands of deaths in Vermont should a similar outbreak occur today. A more serious strain of the flu is anticipated in the future and vaccines might not be available in time to combat rapid spread.

The COVID-19 pandemic led to a complete disruption of daily life in Vermont. A state of emergency was issued by Governor Phil Scott on March 13, 2020 to help ensure Vermont had the resources necessary to respond to the COVID-19 public health emergency. In the following weeks, a series of executive orders were issued restricting activities likely to result in transmission or use up valuable medical resources. Some of these included restricting visitor access to long term care facilities, suspending in person PreK-12 education, closing bars and restaurants, suspension of elective and non-essential medical surgeries, interstate travel restrictions, and limits on non-essential gatherings. COVID-19 restrictions stayed in effect until June 14, 2021 when 80% of Vermont's eligible population (those 12 and older) had received at least one dose of COVID-19 vaccine, in accordance with the State's Vermont Forward Plan. To date, Vermont has documented more than 150,000 cases and 900 deaths due to COVID-19.

Vector-borne diseases continue to pose a significant and growing threat. In 2019, Vermont ranked highest in the United States for Lyme disease incidence, and is often at or near the top of incident rankings. the Vermont Department of Health has tracked Lyme disease cases in the state since for several decades, though not at the town-level. Shifting habitats and climate changes continue to create favorable conditions for pathogen-carrying ticks to proliferate. Other insect-borne diseases are also present in Vermont. West Nile Virus was confirmed in mosquito populations in Vergennes and New Haven in August and September of 2023.

Other vector-borne diseases have been noted recently in and near Panton. Between 2005 and 2022 Panton has had five rabies cases seen in skunks and raccoons with the most recent confirmed case in August 2021. Ferrisburgh and New Haven also had reported rabies cases in 2019. In June 2022, a Panton resident and her dog were attacked by a coyote but rabies was not confirmed and the attack may have come from a female coyote with young in the area.

Future Probability:

According to the Centers for Disease Control (CDC), the number of reported cases of vector-borne infectious disease more than tripled between 2004 and 2016 and can be expected to continue rising.

Climate change can increase the range of diseases and their vectors and increase infection rates. Warmer temperatures allow more diseases and their vectors to expand and establish populations farther north, where harsh winters temperatures previously inhibited expansion.

The increase in Lyme disease is the most significant trend in infectious disease cases in Vermont. The Vermont Department of Health reports a dramatic increase in reported cases of Lyme disease around the state and milder, shorter winters increases the potential for infection through tick bites. Additionally, early successional habitat on road edges and retired farmland could provide a more suitable habitat for ticks and their hosts, which may lead to further spread of Lyme disease.

Mosquito vector activity in Vermont is also likely increase due to expected increases in temperature and precipitation, which will also lengthen the seasonal risk of mosquito-borne diseases.

Given increasing trends for global travel, several additional diseases not previously observed in Vermont may be introduced by infected travelers.

Vulnerability Summary:

People who are immunocompromised, elderly and young, and healthcare workers are most vulnerable to infectious disease. These populations are at heightened risk of infection and death due to weakened immune systems or compounding factors of other illnesses or stressors. Outdoor laborers and recreationalists are especially vulnerable to mosquito-vector transmission and tick bites that may cause Lyme disease.

Infectious Disease Outbreak events are considered a **HIGH PRIORITY** for the Town of Panton, with an overall vulnerability score of 4.5 determined.

4.3.7 Accident or Fire at Solar Energy Storage System (Vulnerability Score 4)

Location:

A 5.0 MW Solar Project built on the north side of Panton Road became operational at the end of 2016. The project, run by GMP, includes a solar panel array accompanied by an Energy Storage System (ESS) composed of Tesla PowerPacks totaling 1 MW or 4 MWh of storage. The battery system measures approximately 4,000 square feet, and includes 10 Tesla Powerpack units. Though rare in these systems, thermal runaway, a rapid and dangerous release of heat and gases which can lead to self-sustaining fires in lithium-ion batteries, can occur.

Extent:

An ESS can release gases including hydrogen, hydrogen fluoride, carbon dioxide, and ethylene, which can be airborne-inhalation threats. In cases of lithium-ion battery fires, residents in the area were directed close windows and doors and turn off ventilation systems to mitigate potential exposure. Due to the relatively small amount of gas emissions from and ESS, emergency response guidance is to establish a 1000-foot buffer area and divert any airborne plumes with the use of fire department fog streams.

ESS battery fires do not create any liquid hazards, but any water used to (try to) extinguish an ESS fire are likely to contain higher concentrations of lithium, hydrofluoric acid, etc. that might adversely affect downstream ecosystems. ESS manufacturers recommend letting an ESS fire burn itself out rather than attempting to extinguish.

Previous Occurrences:

No Vermont solar /ESS facilities have caught fire. ESS fires have occurred in elsewhere in the United States and other countries. The most notable such fire occurred at a 2.16 MWh facility in Surprise, Arizona in April 2019, which had lithium-ion battery facilities were located in a closed facility. Four responding firefighters were injured in that event.

In July 2021, a Tesla battery bank caught fire while it was being set up in Moorabool, Australia, and then spread to a second battery within a 300MW battery project. The fire burned into a fourth days before it was declared under control. In 2022 a fire broke out in at the Salt River Project in Chandler, Arizona, a 10MW energy storage project that uses lithium-ion batteries. Robots were used to enter the facility and open the doors and, allowing gases to dissipate. In September 2022, battery units caught on fire within a battery energy storage facility housing a 182.5 MW Tesla Megapack system, in a facility located in Monterey County, California. While that fire was fully controlled within 18 hours, California's Highway 1 was shut down and smoke was present in the area for several days.

Future Probability:

Because the Panton ESS and other GMP ESS in Vermont are open to the air, there is no opportunity for gases to accumulate, the risk of explosion is highly unlikely, though not impossible. The greatest physical risks of an ESS fire are to first responders and all possible prevention measures should be taken.

Vulnerability Summary:

The GMP Solar Facility and ESS in Panton is in an open, rural setting. The recommended 1000-foot buffer zone around the facility does not include any residential or public buildings, facilities, or roads (see All-Hazards Planning Map, page 16) and is in close proximity to municipal water hydrants along Jersey Street if fog streams are required. While probability and geographic extent are considered low, the warning time is potentially short and l response from neighboring municipality responders could be complex. The relative novelty and the visibility of this location are extremely high, potentially resulting in greater public concern.

An accident or fire at the GMP Solar Facility is considered a **HIGH PRIORITY** for the Town of Panton, with an overall vulnerability score of 4.0 determined.

4.3.8 Severe Winter Ice or Snow Storm (Vulnerability Score 4.0)

Location

Severe winter storms are common throughout Vermont and can occur in any part of Panton. The town is somewhat moderated by neighboring Lake Champlain and generally receives less snowfall than higher elevation areas, but can still experience significant ice storm events. Pease Road, East Road, Arnold Bay Road. and Spaulding Road have been previously identified as areas where downed trees frequently cause power loss.

Extent

Because winter storms are extremely temperature and elevation dependent, they are notoriously difficult to predict. When conditions conducive to ice build-up are predicted, the National Weather Service issues a Winter Storm Warning with emphasis on ice accumulation.

Previous Occurrences

The National Climatic Data Center reports that the Addison County region has experienced two major Ice Storm events over the past 25 years. During that period, an estimated $850,000 in total property damages were recorded in the region. The highest recorded damages were incurred during the January 1998 Ice Storm which impacted most of the northeastern US and resulted in ice accumulations of up to ¾ inch, a loss of power for up to 2.5 weeks, and $750,000 in damages within Addison County. The Panton LHMPC identified the 1998 ice storm as the worst that had occurred in the region while acknowledging that Panton residents were largely spared its impact. Addison County had a high wind event on December 22-23, 2022 with downed power lines and road closures, followed by temperatures falling into the single digits, with wind chills of zero to the minus 10's, but Panton was again largely unaffected.

Since 1970, NOAA has documented winter storm-damage events across Addison County each year, primarily between November and April:

	January	February	March	April	May	June	July	August	September	October	November	December
Ice Storm	1	0	0	0	0	0	0	0	0	0	0	1
Blizzard	0	0	1	0	0	0	0	0	0	0	0	0
Heavy Snow	0	7	1	0	0	0	0	0	0	0	0	1
Winter Storm	28	38	42	10	0	0	0	0	0	1	14	42
Winter Weather	54	32	27	12	0	0	0	0	0	7	11	44

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

In March of 2001, a string of winter storms impacted all of Vermont, including Panton. On March 5 and 6, 15"-30" of snow fell, followed by 10"-30" on March 22, and another 10-20" on March 30.

Future Probability

Major impacts to Panton residents are loss of power and an occasional downed tree or branches in the road. While the town hall and town garage frequently lost power in the past, both now receive backup power from the solar project on Panton Road. Warmer temperatures associated with climate change may result in less snow and a higher likelihood of ice in winter. Climate change predictions indicate increased atmospheric moisture and snowfall as well as the possibility of jet stream alterations producing "bomb cyclones" that might increase sudden deep freezes or ice storms in early spring and late fall. In all cases, winter storms are predicted to increase in severity.

Vulnerability Summary

The Town of Panton is a rural community with one major highway and dispersed population. Since utility companies prioritize restoration efforts in densely populated areas, Panton is at risk of extended power outages if power fails due to an ice storm.

GMP is working on the expansion of what is known as the "microgrid" at the Panton Road solar project. The ESS currently provides back up power to the town garage and town hall, as well as approximately 50 residences along Panton Road. When the microgrid expansion is complete, another 50 to 100 residences will have back-up electricity should the primary grid fail. In other areas of Panton, trees along its rural roads still pose a risk to adjacent power lines during storms.

The community vulnerability rating for Ice Storm and accompanying widespread power outage is 4.0 and is considered a **HIGH PRIORITY**. Following the 1998 ice storm, utility companies have improved generation and delivery systems which has reduced overall vulnerability to outages. These improvements, combined with power "islanding" created by the solar microgrid ESS backup will reduce Panton's vulnerability in the near future.

4.3.9 Hail Storm (Vulnerability Score 3.5)

Location:
Hail can occur anywhere in Vermont, but tend to be highly localized and limited to a relatively small area.

Extent:
Hail is considered a relatively infrequent occurrence in Vermont. Storms can be significant to local farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage, including both structures and vehicles. Hailstone size can range from the size of a pea to the size of a melon.

Previous Occurrences:
There have been no significant hailstorms documented in Panton since 1970. There have been documented occurrences in neighboring Ferrisburgh (2), Vergennes (4), and Bridport (7), all between 2008 and 2014 and all with magnitude of hail less than 1.0 inch in size. No property or crop damage was recorded as a result.

Hailstorms usually occur in Vermont during the summer months and generally accompany passing thunderstorms.

	January	February	March	April	May	June	July	August	September	October	November	December
Panton-Neighboring Towns	0	0	0	0	3	5	4	1	0	0	0	0
All Addison County	0	0	0	0	16	19	38	19	3	2	0	0

Source: https://www.ncdc.noaa.gov/stormevents/

Future Probability:
Significant hailstorms are likely to occur relatively infrequently, and have not shown significant change in frequency over time. According to the 2018 National Climate Assessment, changes in the frequency or severity of hail events are still uncertain.

Vulnerability Summary:
The impact from hail is considered to be negligible to infrastructure, life, the economy and the environment. However, hail can damage property, young and tender plants, and cause bodily harm to those individuals unfortunate enough to be caught outside. As a result, farmers and outdoor recreationists are more vulnerable to hailstorms than other groups of people.

The community vulnerability rating for a Hail Storm is 3.5 and is considered a **MODERATE PRIORITY**.

4.3.10 Wildfire (Vulnerability Score 3.5)

Location: Severe wildfires are uncommon throughout Vermont, but minor fires are regular occurrences and could conceivably occur in any part of Panton. Unmowed field edges and grass or shrub vegetation are the most likely locations for fires to start.

Extent:
A Wildfire is the uncontrolled burning of woodlands, brush, or grasslands. These do not generally include Prescribed Fires that are intentionally set to burn for beneficial purposes.

Panton's climate, vegetation types, and landscape discourage major wildfires. Wildfire conditions in the Champlain Valley are typically at their worst either in spring when dead grass and fallen leaves from the previous year are dry and new leaves and grass have not come out yet. The majority of fires in Vermont are caused by burning debris, though they can be a result of naturally occurring influences such as lightning, and exacerbated by drought and extreme heat. Open burning of natural and untreated wood, brush, weeds, or grass requires a 'Permit to Kindle Fire' from the Town Forest Fire Warden. When there is significant fire danger, open burns are banned entirely.

Previous Occurrences:
There has not been a major wildfire in Panton or all of Vermont in the last 50 years. Most wildland fires occurring in vegetation or natural fuels in Vermont are quickly reported and contained. The Town Forest Fire Warden issues permits and local fire departments respond for wildland fire control with mutual aid assistance from other towns and the State, when necessary.

The greatest impacts to communities from wildfires are smoke from wildfires in Canada and the western United States. In 2023, Panton and much of Vermont experienced substantial impacts from Canadian wildfire smoke from June 5 to 8. The entire state experienced poor air quality, with records for highest ever 24-hour average concentration of fine particulate matter (PM2.5, µg/m3), broken several times over multiple days and far exceeding the previous records.
Air quality was worst in the south and west of Vermont, with the Air Quality Index exceeding 400 in some locations, considered "hazardous" for all populations, resulting in cancellations of outdoor activities and widespread distribution on N95 masks to the public.

Future Probability:
Although wildfires are currently uncommon in Vermont, the HMC acknowledged that extended periods of warming due to climate change have the potential to increase the occurrence of wildfire events. Unhealthy wildfire smoke from out-of-state wildfires is also expected to affect Vermont more frequently and severely in the future, as climate change is already increasing wildfire risks in the western United States and Canada.

Vulnerability Summary
Populations that are more vulnerable to wildfire include firefighters, isolated residents, and immunocompromised individuals. The community vulnerability rating for a Wildfire is 3.5 and is considered a **MODERATE PRIORITY**.

4.3.11 Drought (Vulnerability Score 3.5)

Location

Drought is an inherent, cyclical component of natural climatic variability and can occur at any place at any time. They are often spread over a larger geographic area than other natural hazards, with gradation of impacts that are not as obvious as other hazards. Significant droughts would affect the entirety of the municipality of Panton, as well as adjoining municipalities and likely extending to other counties and states during the same event.

Extent

The severity of a drought depends on the duration, intensity, and geographic extent of the water shortage, as well as the demands on the area's water supply. Droughts are rated in classifications from D0–D4, depending on the severity of the drought, the amount of time it will take for vegetation to return to normal levels, and the possible effects of the drought on vegetation and water supply. High winds, low humidity, and extreme temperatures can all amplify the severity of a drought.

Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures Coming out of drought: some lingering water deficits pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely Water shortages common Water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses Widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies

Source: http://droughtmonitor.unl.edu/AboutUSDM/DroughtClassification.aspx

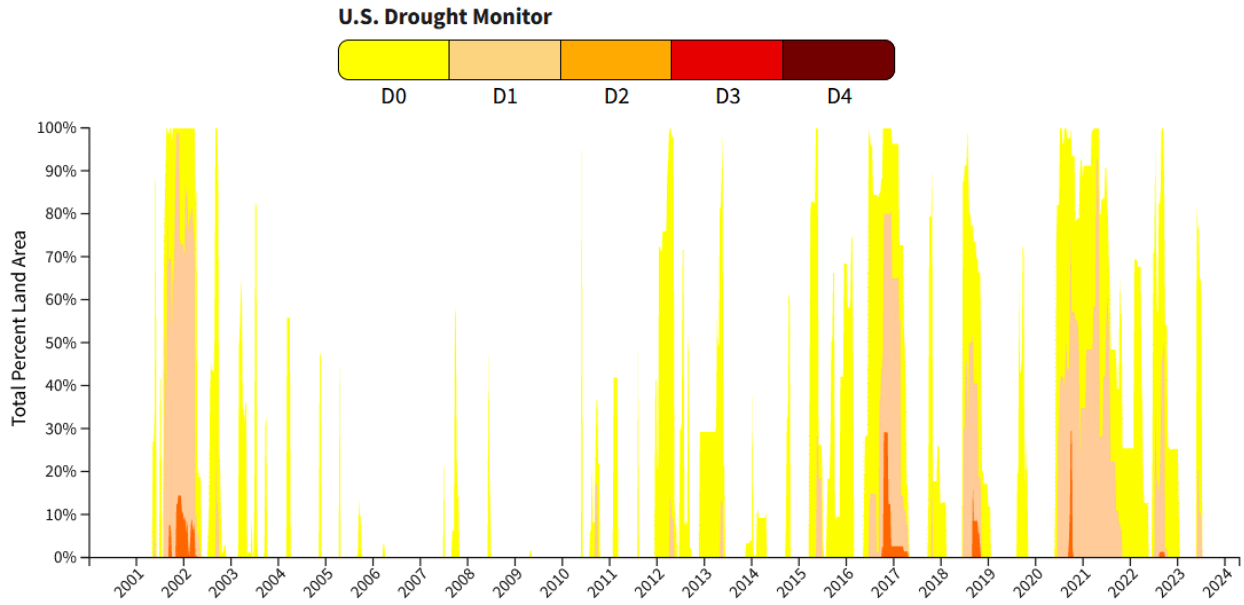
The impacts of drought are typically felt by rural residents in areas like Panton first. Drought can cause extensive damage to gardens, agricultural crops and livestock. Drought can also lead to dry or low water levels in wells needed for drinking water. and can also concentrate water contaminate levels and lead to resulting in potential health concerns.

Soil moisture, streams, and groundwater are all depleted due to drought. Drought depletes water availability for both cultivated and wild plants and animals. Lack of rain combined with high temperatures can lead to significant crop loss.

As a result, the economic effects of a drought can be just as devastating as any other natural hazards.

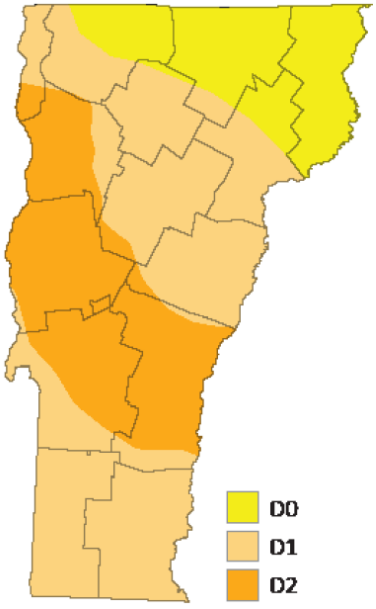
Previous Occurrences

Droughts, while low frequency hazards, are of serious concern to the population of Vermont. It is often difficult to recognize the onset of a drought during its preliminary stages. Since 2000, drought conditions measured by intensity indices have periodically surged in Vermont.



Source: https://www.drought.gov/states/vermont#historical-conditions

Beginning in 2001, New England experienced historic drought conditions not seen since the 1960s. In 2001-2002, large parts of Vermont were affected by a Severe Drought (D2), but Panton and the Champlain Valley were judged to have only reached Abnormally Dry (D0) conditions.



A series of drought conditions have affected portions of Vermont nearly annually over the past decade. Parts of central Vermont were in Severe Drought (D2) from October 2016 through April 2017, peaking in October and November 2016. At least 80% of the State was in at least Moderate Drought (D1), including all of Panton and Addison County reaching Severe Drought (D2) (Figure). Moderate Drought conditions returned in October of 2017 and again in June 2018.

Since 2018 there have been three Severe Droughts, more than the previous two decades combined. From September to November of 2018 the State experienced another Severe Drought. Then from June 2020 to October 2021 much of the State was under Moderate Drought to Abnormally Dry conditions. From September to October of 2020 29.4% of the State was under Severe Drought conditions.

Figure 3. Map of abnormally dry (D0) to severe drought (D2) during significant 2016 drought period in Vermont
(Source: https://www.drought.gov/drought/states/vermont)

Future Probability
Relative to other regions of the country, severe droughts are not frequent occurrences in Vermont.

However, wet and dry extremes are expected to increase over time across the state: Vermont's precipitation trend is an on upward trajectory, having seen increases in average annual precipitation of 7.5 inches since 1900.[5] At the same time Vermont is seeing an increase in average annual maximum and minimum temperature, which is contributing to an increased likelihood of drought. Higher temperatures lead to increased rates of evaporation, combined with dry periods between intense precipitation events will lead to increased dry conditions.

Vulnerability Summary
The community vulnerability rating for a Drought is 3.5 and is considered a **MODERATE PRIORITY**.

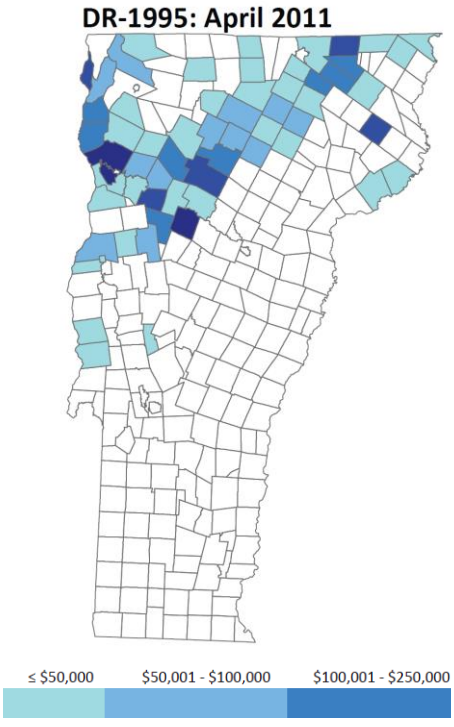
4.3.12 Lake Shore and Creek Inundation Flooding (Vulnerability Score 0.75)

Location:
Due to its relatively flat topography and lack of swiftly-moving streams, inundation flooding due to the rise of lake water levels is a more significant threat than fluvial erosion. Minor shoreline flooding may occur in Panton when the Lake Champlain water level exceeds 100' above sea level. Water levels can also rise due to backflow along Dead Creek and Otter Creek.

Extent
The impacts of inundation flooding can be far-reaching, disrupting communities by causing damage to the built environment, as well as local and regional economies and the natural environment. A very limited area in Panton is considered susceptible to flooding of any kind, and inundation areas are well understood and documented. The Special Flood Hazard Area (SFHA), or 1% annual chance floodplain, mapped by FEMA occurs along a thin strip adjoining Lake Champlain and a small buffer along Dead Creek and Otter Creek (Appendix 3). State mapped river corridors are located entirely within this area and there are few streams that drain watershed areas of more than two square miles.

All structures and residences along Panton's lakeshore are located well above the highest recorded flood level of 103', so little if any inundation damage affects private property. Erosion of the clay soils of the lakeshore is a known hazard and many private landowners have undertaken shore stabilization measures. Rising waters in Otter Creek and Dead Creek are slowed by dams and upstream wetlands. Due to regular onset of rising waters, shore elevation about the lake, and the enforcement of zoning regulations, there are no residential structures located within the special flood hazard area.

Previous Occurrences

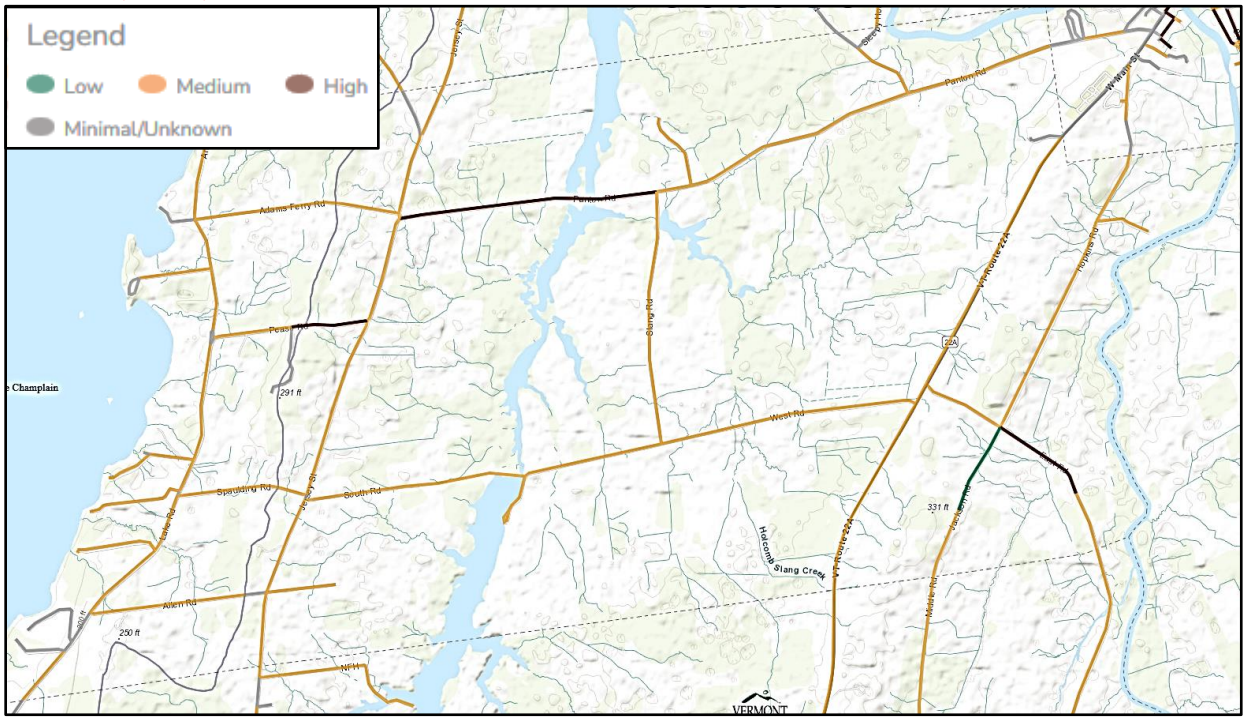


The only recorded inundation-flooding event in Panton occurred in April-May, 2011, when Lake Champlain water levels broke high-water records. Heavy rains in late March and early April on top of a deep late season snowpack resulted in river flooding and sent Lake Champlain well over the 500-year flood elevation. Additional spring runoff events resulted in Lake Champlain being above base flood elevation for more than a month.

Minor flooding impacted the Town-owned public use/access area at the Arnold Bay boat launch and beach area with flood waters reaching the base of the access road and completely covering the beach area. Damage from flooding at Arnold Bay was limited to minor erosion of the beach and access road. Dead Creek rose over the bridge on Panton Road, closing the road and resulting in minor damage to the road bed and culverts. The Town is committed to monitoring and responding to all lakeshore flooding and slope erosion events, and taking steps to maintain post-disaster funding percentage from the VT Emergency Relief and Assistance Fund.

Figure 1. DR-1995: April 2011 Federally declared flooding disaster public assistance expenditure by municipality (*Source: www.fema.gov/openfema)*

Figure 2. Panton Infrastructure Asset Risk from the Vermont Transportation Resilience Planning Tool (TRPT)



Source: https://vtrans.vermont.gov/climate/trpt

Future Probability

In Vermont, average annual precipitation has increased by almost 7 inches over the past 50 years. The northeastern United States is projected to experience above average precipitation in the winter and spring, with even wetter conditions expected under a high greenhouse gas emissions scenario, and is also projected to experience more frequent, heavier rainfall events. These anticipated increases in both frequency and magnitude of precipitation in Vermont are expected to lead to alterations of hydrology and increased inundation flooding events.

Vulnerability Summary

The only areas of vulnerability in Panton are the recreational lake access and the lowest-lying road segment across Dead Creek east of the town village center (Figure 2). Therefore, the community vulnerability rating for a Lake Shore Inundation Flooding is 0.75 and is considered a **LOW PRIORITY**.

4.4 Downgraded Hazards from previous Hazard Mitigation Plan

Requirement 44 CFR § 201.6(c)(d)(3)
(Revisions due to priorities changes)

The vulnerability to the following hazards was revised due to changes in community priorities and lack of risk and historical occurrence

Earthquake

Vermont and New England are classified as a "moderate" seismic activity area. Several seismic centers and events have been projected to have a <2% chance of affecting Addison County in the next 50 years, including:

- The Middlebury Once-in-500-year earthquake (5.7 magnitude)
- The Goodnow, NY Once-in-500-year earthquake (6.6 magnitude)
- The Montreal, Quebec (6.8 magnitude) Once-in-500-year earthquake
- Tamworth, NH (6.2 magnitude) Once-in-500-year earthquake

Activity in any of these seismic centers is predicted to produce low to moderate damage to buildings, transportation and utility systems, and minimal casualties and economic loss. The Panton LHMPC and residents do not consider the risk of an earthquake high enough to require a specific mitigation plan.

Riverine Flooding and Fluvial Erosion

Panton is relatively flat and its two waterways—Dead Creek and Otter Creek-- have almost imperceptible current and behave more like estuaries of Lake Champlain, so fluvial erosion has not historically affected Panton and there have been no recent incidents.

In addition, Panton's only operational infrastructure in a low-lying area is Panton Road where it crosses Dead Creek history of flooding damages. West Road formerly crossed Dead Creek south of Panton Road, but the West Road bridge was abandoned and replaced by an impoundment dam when the Dead Creek Wildlife Management Area was established in the 1950s. One member of the LHMPC remembers a time when Panton Road flooded and resulted in a traffic detour, but there were no damages recorded. Both the Statewide Highway Flood Vulnerability and Risk Map (Figure 3) and the Vermont Transportation Resilience Planning Tool (Figure 4) cite the section of Panton Road where it crosses Dead Creek as important because it connects the village area to the rest of the county road network.

5. Community Mitigation Strategies

Requirement 44 CFR § 201.6(c)(3)(i)
(Goals to reduce vulnerability to Hazards)

5.1 Hazard Mitigation Goals by Hazard Type

The Town of Panton's goal is to reduce vulnerabilities to the hazards identified in section 4.3 and mitigate their potential harmful effects while recognizing that political will and lack of funding stand in the way of many mitigation projects. The Town supports residents' efforts to mitigate their individual risks. The Town evaluates all potential hazard mitigation effort to ensure the benefit realized justifies the cost to Town property owners.

Identified Hazard	Primary Mitigation Goal
Hazardous Materials Transportation Accident	Protect the health and safety of residents, and ensure that highway improvements result in safer conditions to reduce the potential for transportation accidents,
Severe Lightning Storm	Protect the health and safety of residents and critical infrastructure.
Invasive Species	Reduce the introduction and spread of invasive species to protect the health of residents.
Tornado or High Wind	Reduce overall vulnerability of residents and property to direct damage and the effects of potential power outages.
Severe Heat	Reduce residents' exposures to extreme heat conditions and ensure that residents have the knowledge and ability to protect themselves.
Infectious Disease Outbreak or Pandemic	Protect the health and safety of the public and maintain critical municipal services.
Accident or Fire affecting Solar Facility or Battery Storage	Protect the health and safety of residents, first responders, and critical infrastructure.
Severe Winter Ice or Snow Storm	Ensure that essential services remain functional during and after winter storm events and minimize potential power outages to reduce vulnerability of residents.
Hail Storm	Protect the health and safety of residents and critical infrastructure.
Wildfire	Protect the health and safety of residents, first responders, and critical infrastructure.
Drought	Reduce overall vulnerability of residents.
Lake Shore Inundation Flooding	Protect public infrastructure.

5.2 Authorities, Policies, Programs, Resources

Requirement 44 CFR § 201.6(c)(3)
(Existing capabilities and ability to expand)

5.2.1. Authorities of Town Officials:

Selectboard: The Selectboard is responsible for the basic administration of the Town. The Selectboard oversees road maintenance and improvements, make appointments to other boards and commissions, and authorize expenditures of voted budgets. The Selectboard has the authority to establish rules and ordinances to regulate traffic, public nuisances, animal control, solid waste management, and recreation in Town.

Planning Commission/Development Review Board: The Planning Commission (PC) is responsible for long range planning in a town particularly as it relates to future land uses and resilience. The PC prepares a municipal plan and zoning bylaws which are adopted by the Selectboard. The Development Review Board (DRB) ensures that proposed land use in Panton conforms with the zoning regulations and Town Plan. PC/DRB members are appointed by the Selectboard.

Zoning Administrator: The Zoning Administrator (ZA) is appointed by the town's Selectboard. The ZA administers and enforces the Town's zoning regulations. The ZA also usually administrators the town floodplain regulations.

Tree Warden: The Tree Warden is responsible for the shade and ornamental trees within town rights-of-way and oversees tree health and directs removal when necessary. The Tree Warden is appointed by the Selectboard.

Fire Warden: The Town Forest Fire Warden directs response to wildland fires, issues burn permits to manage open burning in town and provides wildfire prevention education. The Town Fire Warden is appointed by the state Commissioner of Forests, Parks and Recreation based on the Selectboard's recommendation.

Health Officer: The Town Health Officer is the executive officer of the local Board of Health. A local board of health may make and enforce rules and regulations…relating to the prevention, removal, or destruction of public health hazards and the mitigation of public health risks. The Town Health Officer is appointed by the Commissioner of Health with approval by the local Selectboard and receives direction from the state Department of Health in investigation and enforcement of public health issues.

Emergency Management Director and Coordinator: By default, a town's Selectboard chair is the town's emergency management director (EMD) unless one is appointed. Many communities retain the authorities of an EMD within the Selectboard and appoint an emergency coordinator instead. The emergency manager is responsible for the organization, administration, and operation of the local emergency management organization. Emergency managers prepare local emergency operations plans, coordinate a local emergency management group, and perform emergency management functions at the local level.

5.2.2. Current policies, programs, resources

These may be expanded on for the following identified hazards:

Hazardous Materials Accident

A representative from the town sits on the local Transportation Advisory Committee (TAC), a regional group whose purpose is to prioritize potential transportation related projects in the region. The TAC prioritizes locations known for crashes for projects to mitigate the risks associated with these locations by changing alignments, adding signage, and reducing speed limits.

Panton also participates in the VTrans High Risk Rural Roads program, having originally applied in 2012. The State Agency of Transportation conducted a safety analysis of most of the locations identified by the mitigation committee and the town is currently waiting for its improvements.

The Town continually works to make the highway system safer throughout town, which includes adding signs to alert drivers to roadway changes to reduce the number of accidents and possible hazmat spills. Ongoing community and state efforts to transition to electric heat may reduce the risk or transportation accidents and delivery spills.

Severe Lightning Storm

The town has mitigated potential damage to Town-owned structures due to lightning strike by installing lightning rods to channel the electrical energy directly to ground rather than through the structure's electrical system.

Through encouragement by insurance carriers and extension agents, most owners of private structures in vulnerable locations have similarly installed lightning rod systems. The Town trusts residents to protect their properties appropriately and has not adopted building codes that mandate lightning protection systems.

The Town offers educational materials on lightning strikes at Town Hall to assist residents in lightning strike prevention.

Invasive Species

The Town Plan includes the goal to improve water quality through measures such as phosphorus reduction, erosion prevention, and control of Zebra Mussels, Eurasian Milfoil, and other invasive species.

Tornado or High Winds

Panton's Zoning Regulations require over-the-top ties and frame ties at each of the four corners of a mobile home and two additional ties per side at intermediate locations.

Severe Heat

The Town Emergency Management Coordinator has developed a Hot Weather-Cooling Shelter Annex to the annual Local Emergency Management Plan (see Appendix 2). A plan for additional supplies and facility upgrades for the Town Hall is underway.

Infectious Disease Outbreak
The Town Emergency Management Coordinator has developed a Continuity of Operations Plan which was adopted by the Selectboard.

Accident or Fire affecting Solar Facility and/or Battery Storage

The Emergency Management Coordinator has developed Shelter-in-Place procedures. Local responding fire departments are aware of the facility, participate in annual hazardous materials training, as well as battery and ESS-specific trainings offered by the Vermont Fire Academy and Regional Fire School.

Severe Winter Ice or Snow Storm

Many private residences have back-up power sources. Town Office Hall and the Town Garage either have been retrofitted in recent years or are scheduled to be fitted with back-up power. Back-up power from the 5MW solar facility by GMP and work completed through an MOU with the Town of Panton have made the town facilities far more resilient in the face of a power outage caused by ice accumulation.

While demand for residential electric service is expected to increase as people relocate into rural areas, GMP has an ongoing program of line clearing and relocation to minimize outages. In addition, planned improvements to the microgrid in Panton will create a more redundant system far less susceptible to failure.

The Town of Panton supports continued development of a robust and redundant local electric generation and transmission system for its residents provided the benefit. outweighs the societal costs associated with industrial electrical generation and potential degradation of the local landscape.

As a small municipality, Panton lacks the resources to provide electricity to residents directly. By negotiating and entering into the March 2016 MOU with GMP, the Town has secured more reliable service for its residents at little cost.

The town recommends building standards for snow loading and ice accumulation, but does not have local building codes. State fire safety and energy codes apply locally, and some zoning regulations impact building design.

Wildfire

Open burning of natural and untreated wood, brush, weeds, or grass requires a 'Permit to Kindle Fire' from the Town Forest Fire Warden. When there is significant fire danger, open burns can be banned entirely.

Inundation Flooding

Enforce Flood Hazard Area Regulations within the 2017 Zoning Regulations to minimize losses due to floods to prevent increases in flooding caused by the uncontrolled development of lands in areas of special flood hazard.

5.3 Project Prioritization Process

Requirement 44 CFR § 201.6(c)(3)(ii)
(Prioritization, Implementation, Administration)

Projects and actions included in Section 5.2 are conducted by the Town of Panton, GMP, or regional and State agencies where noted. The Town encourages its residents to adopt mitigation actions which could protect their personal property by making educational materials available to residents. Mitigation actions identified in Section 5.4 are considered the jurisdiction's priority mitigation actions.

The Town has established the following priorities for choosing mitigation projects: Life safety and the safety of its residents, keeping local roads and bridges open to ensure access for emergency vehicles, and protecting critical infrastructure facilities in the town. These actions/projects are regularly evaluated for benefit to the community, estimated project cost. and political will to implement, and will be carried out as those factors indicate.

The actions identified in Section 5.4 under each hazard are listed in their order of priority as evaluated by the LHMPC against the priorities listed above. Any projects will also be reviewed for feasibility and cost effectiveness before work begins. A minimum Cost/Benefit Ratio (BCR) of 1.0 will be required prior to any request for federal mitigation funds. The projects in section 5.4 will be reviewed as part of the annual budget process and following any local disaster declaration.

5.4 Proposed Mitigation Actions by Hazard Type

Requirement 44 CFR § 201.6(c)(d)(3)
(Revisions due to priorities changes)
Requirement 44 CFR § 201.6(c)(3)(ii)
(Range of actions and projects considered)

The following list of proposed mitigation actions and projects was updated and revised from the previous plan due to changes in community priorities. The LHMPC identified and analyzed specific mitigation actions from the previous Hazard Mitigation Plan, the State Hazard Mitigation Plan, and neighboring municipalities

Only projects deemed reasonable and feasible based on cost and political willingness are included. If a local disaster is declared, the Town will use any Public Assistance funds available to maximize FEMA Section 406 hazard mitigation funding-identified mitigation opportunities.

Each project in this action plan includes an estimated cost, possible funding sources, potential benefits, the lead person or agency responsible for completion of the project and an estimated start and end time. Timeframes are an estimate only and are dependent upon funding and the political will to complete.

Requirement 44 CFR § 201.6(c)(3)(ii)
(Actions for each identified hazard)
Requirement 44 CFR § 201.6(c)(3)(iii)
(Responsible position, potential funding, expected time frame)

5.4.1. Hazardous Materials Transportation Accident

Reduce speed limits on Lake Street and limit trucks to local deliveries (to prevent drivers using it instead of Rte. 22-A)

Estimated cost to Town: $1,000 (traffic engineering study and signage cost)
Source of funds: Town Highway Budget
Responsibility: Road Foreman and Selectboard
Timeframe: Q3 2024 – Q4 2026
Benefits: Reduce likelihood of accidents on sections of town roads near residences.

Improve Dead Creek Bridge on Panton Road or reduce heavy vehicle traffic

Estimated cost to Town: 25% match for State hazard mitigation infrastructure funding
Source of funds: State Hazard Mitigation Funding
Responsibility: Selectboard and Road Foreman
Timeframe: Q1 2026 – Q4 2029
Benefits: Increase lifespan and resilience of road infrastructure connecting the Village and Lakeshore areas to nearest city center and emergency response agencies.

Maintain or increase County Sheriff's patrols for visibility

Estimated cost to Town: $7,000 per year
Source of funds: Town General Fund
Responsibility: Selectboard
Timeframe: Q3 2024 – Q4 2026
Benefits: Reduce speeding hazard and decrease probability of crashes involving hazardous materials.

Encourage conversion to alternate heating sources to reduce overall transport of fuels

Estimated cost to Town: Town Support of GMP Solar Array
Source of funds: GMP's Community Energy & Efficiency Development Fund (CEED)
Responsibility: Town Selectboard and GMP
Timeframe: Ongoing
Benefits: Increase energy efficiency of current housing stock and reduced transport of hazardous fuels over town highways.

Train and maintain awareness of VT Alert procedures to notify residents in the event of an incident.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMD and EMC
Timeframe: Q3 2024 - Ongoing
Benefits: Ability to notify residents and drivers in the event of an incident, provide evacuation information.

5.4.2 Severe Lightning Storm

Maintain Lightning Protection Devices on Town-owned Buildings (Town Hall and Town Garage) to mitigate potential lightning strikes.

Estimated cost to Town: $500
Source of funds: Town Highway Budget and Town General Fund
Responsibility: Selectboard
Timeframe: Q1 2024 - Ongoing
Benefits: Reduced fire hazards to Town-owned buildings due to lightning strike.

Provide educational materials at the town office and include with zoning permit applications.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Zoning Administrator and Town Office Staff
Timeframe: Q3 2024 - ongoing
Benefits: Reduce private property damage due to lightning strikes.

5.4.3 Invasive Species

Provide educational materials to town residents about preventing the spread of invasive species, including the movement of firewood to slow the spread of Emerald Ash Borer and mitigating the effects of Zebra Mussels.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Town Office Staff
Timeframe: Q3 2024 - Q4 2029
Benefits: Reduce spread of existing aquatic and terrestrial invasives, prevent new introduction.

Support the removal of dead and dying trees killed by invasive insects or pathogens that threaten public safety and replacement of ash trees along powerlines with native tree species that are shorter at maturity.

Estimated cost: $3000
Source of funds: Town General Fund
Responsibility: Road Foreman and Highway Crew
Timeframe: Q3 2024 - Q4 2029
Benefits: Reduce risk to of dead trees falling on residents, vehicles, and power lines resulting in electrical outages.

Provide educational materials landowners to control Wild Parsnip by digging out the individual plants and disposing of them properly, or if an infestation has already become well-established and covers a large area, to continually mow (several times during the summer for 3-5 years) the plants before they flower and produce seed.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMC or Tree Warden
Timeframe: Q3 2024 - Q4 2029

Benefits: Reduce existing Wild Parsnip infestations and limit further spread.

5.4.4 Tornado or High Wind

Encourage GMP to install power lines underground

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Selectboard, Planning Commission, and GMP
Timeframe: Q3 2024 - Q4 2029
Benefits: Reduce power outages due to wind, snow, and ice storms.

Remove dead and dying trees within Town rights-of-way that could fall during a high wind event.

Estimated cost: $3000
Source of funds: Town General Fund, Grants
Responsibility: Road Foreman, Highway Crew and Tree Warden
Timeframe: Q3 2024 - Q4 2029
Benefits: Reduce risk to of dead trees falling on residents, vehicles, and power lines resulting in electrical outages.

Require installation of "hurricane clips" on mobile homes.

Estimated cost: $50/year (ZA wages and mileage)
Source of funds: N/A
Responsibility: Zoning Administrator
Timeframe: Q3 2024 - Q4 2029
Benefits: Reduce risk of wind damage to mobile homes and inhabitants

5.4.5 Severe Heat

Adopt and update Hot Weather Emergency Response Plan (Appendix 2) as annex to annual LEMP.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMD, EMC, Selectboard
Timeframe: Q3 2024 - Ongoing Annually
Benefits: Provide clear thresholds and procedures for hot weather mitigation actions.

Maintain facilities and supplies at Town Hall for use as a local cooling shelter and coordinate with Vergennes authorities to provide a regional shelter if needed.

Estimated cost: $3000
Source of funds: Town General Fund
Responsibility: Selectboard, Town Office Staff
Timeframe: Q3 2024 – Q4 2028
Benefits: Provide a daytime shelter location for vulnerable residents during extended power outages and hot weather to reduce detrimental health effects.

Plan for Arnold Bay beach improvements for accessible swimming area

Estimated cost: $1000
Source of funds: Municipal Planning Grants, Town General Fund
Responsibility: Town Selectboard, Planning Commission
Timeframe: Q3 2024 – Q2 2025

Benefits: Increase accessibility of outdoor cooling site.

Set up processes to check on vulnerable populations during and following severe heat events. (Appendix 2).
Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMD and EMC
Timeframe: Q3 2024 - Ongoing as needed
Benefits: Reduce vulnerability of local populations and provide community support system.

5.4.6 Infectious Disease Outbreak

Work with VT Department of Health to disseminate health information and protective supplies.
Estimated cost: Staff wages and benefits for necessary time
Source of funds: N/A
Responsibility: EMD and EMC, Town Office Staff
Timeframe: Q3 2024 - Ongoing as needed
Benefits: Reduce spread of respiratory diseases and increase public health awareness.

Develop and maintain continuity planning and agreements for potential town staff shortages.
Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMD and EMC, Selectboard, Town Office Staff, Highway Department
Timeframe: Q3 2024 - Q1 2025
Benefits: Provide continuity of operations in the event of a pandemic or infectious disease outbreak.

5.4.7 Accident or Fire affecting Solar Facility and/or Battery Storage

Contract with Vergennes Fire Department (VFD) for fire coverage and support regular response training between GMP, VFD and other local response agencies to understand Panton ESS facility and potential response procedures.
Estimated cost: $40,000 per year
Source of funds: Town General Fund
Responsibility: Selectboard
Timeframe: Q3 2024 - Ongoing
Benefits: Enhance response to potential ESS fire and reduce risk to first responders.

Maintain awareness of VT Alert to notify residents in the event of an incident.
Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMD and EMC
Timeframe: Q3 2024 - Ongoing
Benefits: Ability to notify residents and drivers in the event of an incident, provide evacuation information.

5.4.8 Severe Winter Ice or Snow Storm

Manage vegetation in the ROW to allow space for removal of heavy/wet snow and ice events.

Estimated cost: $3,000/year
Source of funds: Town Highway Fund
Responsibility: Road Foreman and Selectboard
Timeframe: Q1 2024 - Ongoing
Benefits: Reduce impacts due to snow and/or ice on roads.

Work with GMP to expand the "Microgrid" through a new distribution line from the Panton Road 5MW solar array and ESS.

Estimated cost: None to town
Source of funds: GMP solar array construction funds
Responsibility: Selectboard and Planning Commission
Timeframe: Q1 2024 – Q4 2028
Benefits: Reduce likelihood of power loss for additional Panton households.

Maintain facilities and supplies at Town Hall so that it can be used as a local warming shelter (Appendix 2) and coordinate with Vergennes authorities to provide a regional shelter if needed.

Estimated cost: $5000
Source of funds: Town General Fund
Responsibility: Selectboard, Town Office Staff
Timeframe: Q1 2024 – Q4 2028
Benefits: Provide daytime shelter location for residents during extended power outages and cold weather to reduce detrimental health effects.

Provide education materials to town residents about emergency supplies and preparation measures.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMD, EMC and Town Office Staff
Timeframe: Q1 2024- Ongoing
Benefits: Reduce vulnerability of local population to winter storms and power outages.

Set up processes to check on vulnerable populations following known winter storm events.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: EMD, EMC and Town Office Staff
Timeframe: Q1 2024 - Ongoing as needed
Benefits: Reduce vulnerability of local populations and provide community support system.

5.4.10 Wildfire

Provide emergency shelter or N95 masks to help mitigate health impacts.

Estimated cost: None to Town
Source of funds: N/A

Requirement 44 CFR § 201.6(d)(3)
(Update on previous mitigation actions)

5.5 Mitigation activities undertaken since 2017 plan adoption

Hazard	Action Description	Project Status
Highway Accident	Request evaluation of hazardous road locations through the Systemic Local Road Safety Program (SLRS)	Dropped, initial evaluations completed in 2014, VTrans has replaced the program with the Highway Safety Improvement Program (HSIP) and no longer accepts requests.
	Lower Speed Limits on Lake St. and Pease Rd.	Ongoing
	Additional Sheriff's patrols on East Rd (shortcut to Middlebury)	Completed
Ice Storm	Provide a source of Back-up Power to the Town Hall (either Battery or Generator) to allow for continued function of town government in the event of a power failure.	Achieved (2020)
	Manage vegetation in the ROW to allow space for heavy/wet snow and ice events. Managed ROW vegetation reduces the likelihood of trees falling on power lines causing power outages.	Ongoing
	Negotiate with GMP to create a "Power Island/ Microgrid" via back up batteries and new distribution line when constructing their 5mw solar array in Panton.	Completed
Lightning strike	Install Lightning Protection Devices on Town-owned Buildings (Town Hall and Town Garage) to mitigate potential lightning strikes	Completed
	Provide educational materials in the town office for distribution with zoning permit applications.	Ongoing
Earthquake	Provide earthquake education materials at the town office available for distribution with zoning permit applications.	Ongoing
Hazardous Materials Spills	Encourage residential conversion to alternate heating sources to reduce overall transport of fuels	Ongoing

6. Plan Maintenance Procedures

Any Hazard Mitigation Plan is necessarily dynamic. The plan will be updated at a minimum every five years to ensure it is current and relevant.

Requirement 44 CFR § 201.6(d)(3)
(Process of mitigation plan integration)
Requirement 44 CFR § 201.6(c)(4)(ii))
(Integration process and planning mechanisms)

6.1 Hazard Mitigation Plan Integration

The goals and actions of this hazard mitigation plan will be integrated into other municipal planning mechanisms, including the annual Local Emergency Management Plan, the annual municipal budget, and Panton Town Plan (re-adoption due in 2027). Sections on Emergency Planning and FEMA Eligibility and Planning for Flood Prevention were added to the Water Resources section and overall goals of the 2019 town plan. A goal to improve water quality through measures such as phosphorus reduction, erosion prevention, and control of Zebra Mussels, Eurasian Milfoil, and other invasive species was added to the Town Plan. Continuity of operations, shelter in place, and hot weather sheltering annexes were added to the LEMP. The EMD and EMC will be responsible for integrating the goals, information and strategy of the mitigation plan into other planning mechanisms

6.2 Hazard Mitigation Plan Review/Update Process

1. The Panton Selectboard assembles a Review/Update Committee that includes government officials and interested public.
2. The Committee discusses the process to determine if any modifications or additions are needed due to changing conditions since the last update. Data requirements will be determined, data sources identified, and responsibility for collecting/updating information will be assigned to members.
3. Other Town plans (Emergency Management Plan, Town Plan, Road Plan, etc.) will be reviewed to ensure a common mitigation thread exists throughout.
4. A draft update will be prepared based on these evaluation criteria:
    - Hazard-related changes in community and government processes since the last review.
    - Progress of previous plan initiatives and projects.
    - Effectiveness of implemented initiatives and projects.
    - Evaluation of unanticipated challenges or opportunities between the date of adoption and the date of the report.
    - Evaluation of hazard-related public policies, initiatives, and projects.
    - Review and discussion of the effectiveness of public and private sector coordination and cooperation.
5. The public will be invited to review and give input on drafts as they are produced.
6. Selectboard members will have an opportunity to review the draft update. Consensus will be reached on any changes to the draft.
7. The Selectboard will notify and schedule a public meeting to ensure adequate public input.
8. The Selectboard will recommend incorporation of community comments into the draft update.

Requirement 44 CFR § 201.6(c)(4)(i)
(Monitoring, Evaluating, and Updating)

6.3 Mitigation Project Status Monitoring and Evaluation

The town of Panton has outlined a process to track the progress/status of actions identified in the LHMP. The plan will be reviewed and updated in its entirety at least every five years as described in Section 6.2. The Town will monitor and evaluate its hazard mitigation goals, strategies and actions/projects annually as the town budget is created. Actions/projects will be added or removed from the Town's work plan based on changing local needs and priorities.

The Planning Commission will use concepts, goals and strategies from this plan to inform the development of the Town Plan. The progress/status of the mitigation actions identified within the mitigation strategy will be tracked by the Selectboard and EMC. The plan will be evaluated for effectiveness annually and post-disasters as detailed in section 6.5.

Requirement 44 CFR § 201.6(c)(4)(iii)
(Future public participation)

6.4 Public Participation

In developing this Hazard Mitigation Plan, the LHMPC solicited and received public input, especially in developing the hazard risk and vulnerability assessment. The municipality will encourage public participation in mitigation actions once the plan is adopted. A copy of the plan and instructions for submitting comments were made available on the town website and at the Town Office. In order to facilitate public comment, an executive summary was written that outlines the main Vulnerabilities, Goals and Mitigation actions.

Public comments and suggestions will continue to be recorded and incorporated into the hazard mitigation plan. The EMD and EMC will report on hazard mitigation progress at the annual Town Meeting and provide information on potential weather-hazards via local networks including Front Porch Forum. A copy of the Hazard Mitigation Plan and instructions for submitting comments will continue to be available on the town website and at the Town Office.

6.5 Post-Disaster Review Procedures

Should a declared disaster occur, a special evaluation process will occur in accordance with the following procedures:

1. The Town will embody a committee to conduct a post disaster review and assessment of actions within six (6) months of a declared emergency event.
2. This committee will document the facts of the event and assess whether the existing Hazard Mitigation Plan effectively addressed the hazard.
3. The committee will create a report of the review and assessment.
4. The committee will decide if the plan needs to be amended. If the committee determines that the plan does not require modification the report will be distributed.
5. If the committee determines the plan does require changes, the committee will draft an amended plan and forward it to the Selectboard for their input.
6. Another public comment period will open and the review committee make additional revisions for the plan before delivering the final plan to the Selectboard for adoption.
7. The Selectboard votes on the adoption of the amended plan.

7. Plan Adoption Resolution

Requirement 44 CFR § 201.6(c)(5)
(Documentation of adoption)

TOWN OF PANTON, VERMONT SELECTBOARD ADOPTION RESOLUTION

WHEREAS, the Town of Panton has occasionally experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Town of Panton, Vermont Single Jurisdiction All-Hazards Mitigation Plan (Plan)**, which can result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Panton has developed the **Plan** and received conditional approval from the Federal Emergency Management Agency (FEMA); and

WHEREAS, the **Plan** identifies specific hazard mitigation strategies, and plan maintenance procedures applicable to the Town of Panton; and

WHEREAS, the **Plan** identifies actions and/or projects intended to provide mitigation for specific natural hazards that impact the Town of Panton; and

WHEREAS, adoption of this **Plan** will make the Town of Panton eligible for additional funding to help alleviate the impacts of future hazards;

Now, therefore, be it RESOLVED by Town of Panton Selectboard:

1. The **Town of Panton, Vermont Single Jurisdiction All-Hazards Mitigation Plan** is hereby adopted as an official plan of the Town of Panton, Vermont. While content related to Panton may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Panton to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions;

2. The respective Town officers identified in the action plan are hereby directed to pursue implementation of the recommended actions assigned to them;

3. Support agencies within the Town of Panton are also requested to implement actions assigned to them within this plan;

4. Plan maintenance procedures described in Section 6 of this plan are also adopted as part of this resolution.

IN WITNESS WHEREOF, the undersigned have affixed their signatures for the Town of Panton, this ____ day of __ _____ ___ 2024.

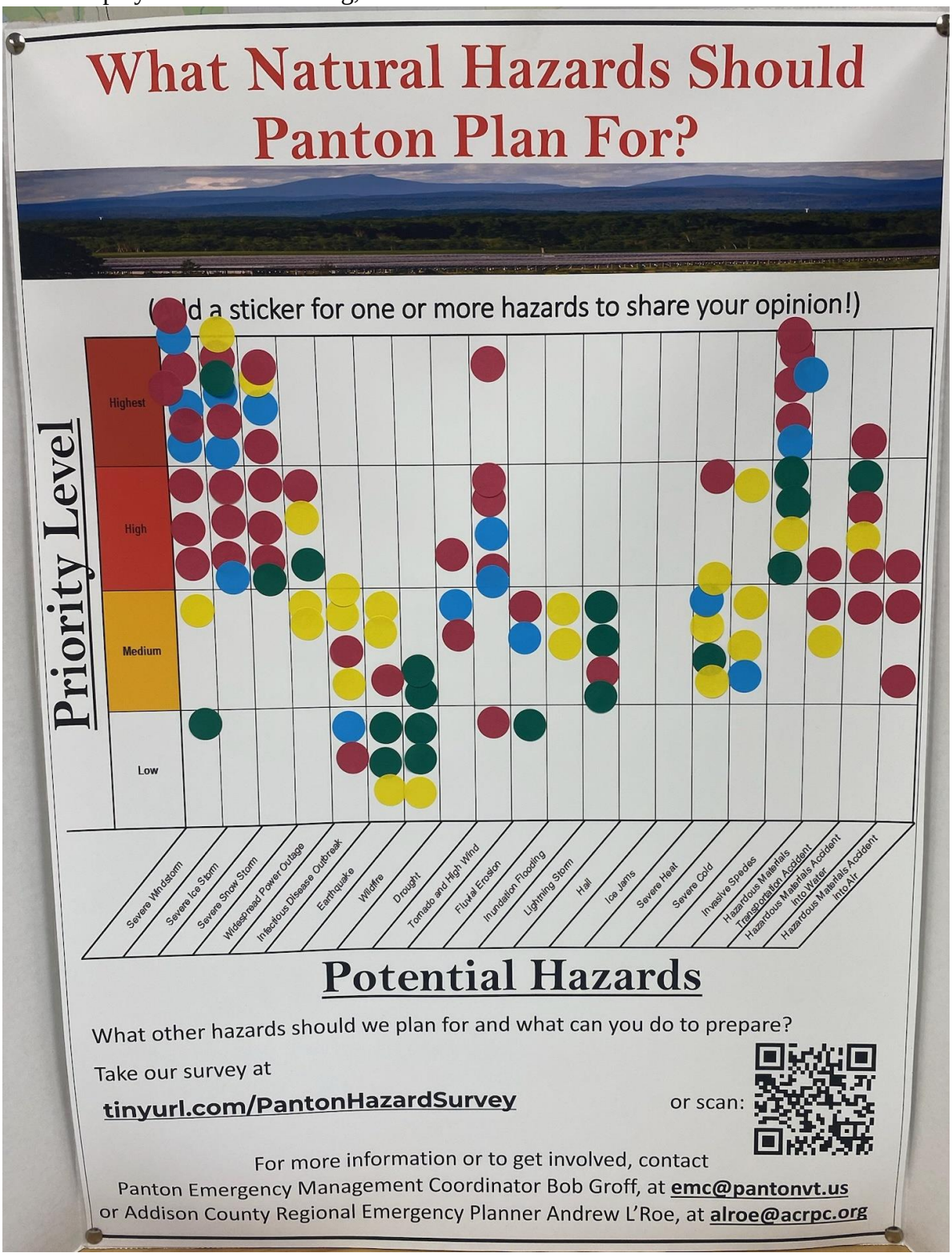
_____ _____ _____

Selectboard Chair Selectboard Member Selectboard Member

ATTEST:_____

Appendix 1. Public Outreach

Poster displayed at Town Meeting, March 2023



Poster displayed at Town offices at and preceding Town Meeting Day, March 2023

The Town of Panton is updating its Hazard Mitigation Plan and needs your Input!!

Hazard Mitigation is sustained action taken to reduce or eliminate long-term risk to people and property due to natural or man-made disasters.

Local Hazard Mitigation Plans are updated every 5 years

A Hazard Mitigation Plan helps our community to:

- Identify cost-effective actions for risk reduction
- Focus resources on the greatest risks and vulnerabilities
- Build partnerships between residents, organizations, and businesses
- Increase education and awareness of hazards and risk
- Communicate our priorities to state and federal officials
- Align risk reduction with other community objectives.

Benefits of having an approved Hazard Mitigation Plan:

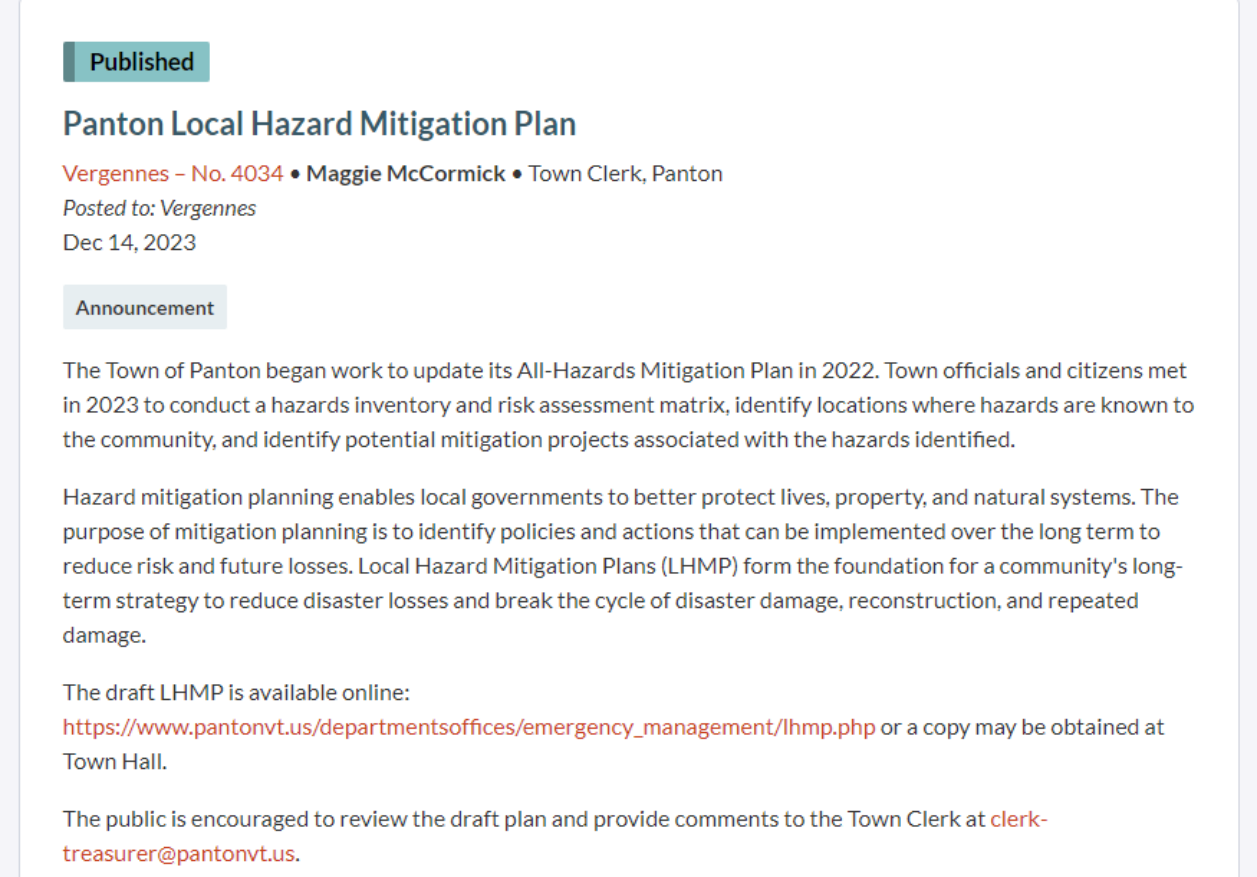
- Municipalities can receive federal funds, e.g. from
  - Hazard Mitigation Grant Program (HMGP), the
  - Flood Resilient Communities Fund (FRCF), and
  - Building Resilient Infrastructure & Communities (BRIC)
- The town gets a higher level of post-disaster reimbursement through the Emergency Relief and Assistance Fund (ERAF).
- Town Officials and First Responders are better prepared!

Online Survey Responses

The online survey received 9 responses from Panton residents, providing the following hazard priority rankings (on 1-5 scale, where 1 = Most Concerned, 5= Least Concerned).

Hazard	Mean Priority (1= Most, 5 = Least)	# of Times Ranked as Most Concern
Infectious Disease Outbreak	2.0	4
Severe Ice Storm	2.1	2
Hazardous Materials Transportation Accident	2.2	3
Hazardous Materials Accident Producing Fumes	2.2	3
Widespread Power Failure	2.2	4
Invasive Species	2.3	1
Severe Wind Storm	2.3	1
High Winds	2.3	2
Severe Cold	2.4	3
Severe Heat	2.8	2
Inundation Flooding	2.8	2
Drought	3.1	0
Fluvial Erosion	3.1	2
Hail	3.2	1
Tornado	3.2	1
Wildfire	3.3	1
Ice Jams	3.3	2
Dam Failure	3.6	2
Earthquake	3.9	1
Landslide	3.9	1

Front Porch Forum posting to municipality:



Published

Panton Local Hazard Mitigation Plan

Vergennes – No. 4034 • **Maggie McCormick** • Town Clerk, Panton
Posted to: Vergennes
Dec 14, 2023

Announcement

The Town of Panton began work to update its All-Hazards Mitigation Plan in 2022. Town officials and citizens met in 2023 to conduct a hazards inventory and risk assessment matrix, identify locations where hazards are known to the community, and identify potential mitigation projects associated with the hazards identified.

Hazard mitigation planning enables local governments to better protect lives, property, and natural systems. The purpose of mitigation planning is to identify policies and actions that can be implemented over the long term to reduce risk and future losses. Local Hazard Mitigation Plans (LHMP) form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage.

The draft LHMP is available online:
https://www.pantonvt.us/departmentsoffices/emergency_management/lhmp.php or a copy may be obtained at Town Hall.

The public is encouraged to review the draft plan and provide comments to the Town Clerk at clerk-treasurer@pantonvt.us.

Stakeholders providing comments:

David Martini, Lakefront Private Water Association president: asked about "toxic runoff" and its potential effect on potable water. (incorporated into HazMat Transportation Accident Hazard section)

Diana Raphael, Town Tree Warden: recommended prioritization of Emerald Ash removal and inoculation (incorporated into Invasive Species Hazard section), as well as roadside plantings for runoff mitigation.

Other Stakeholders contacted for review:
Vergennes Fire Department

Panton Lakeshore Private Water Association

Panton Community Church

Addison County Regional Emergency Management Committee

Addison County Regional Planning Commission, Full membership

Appendix 2. Hot Weather-Cooling Shelter Annex of annual Emergency Management Plan

Hot Weather Emergency Response Plan

Risk category	Forecasted heat index (°F)	Advisory/warnings triggered
Low Risk	Less than 80°	None
Limited Risk	80° - 89°	None
Elevated Risk	90° - 94°	None
Significant Risk	95° - 104°	Heat Advisory
Extreme Risk	105° or hotter	Excessive Heat Warning

National Weather Service Extended Forecast for Panton, VT (https://tinyurl.com/j8jua7nc)
National Weather Service Forecast Office Burlington VT (https://www.weather.gov/btv/)

Overall Responsibility

	Primary Lead	Secondary Lead
Name	*Howard Hall*	*Bob Groff*
Title	*EMD/Selectboard Chair*	*EMC*
Contact info	*howardhall@pantonvt.us*	*emc@pantonvt.us*

Overview of Actions, Triggers, and Responsibilities

Action	**Trigger**	**Responsibility**
Public Outreach: Seasonal Information	End of Spring/First day over 90°	Secondary Lead/EMC
Public Outreach: Cooling Places and Centers	Event Driven, generally with Heat Advisory (95° - 104°)	Secondary Lead/EMC
Public Outreach, Cooling Shelter Activation	Event Driven, generally with Heat Warning (105°or hotter) for 2 or more consecutive days	Primary Lead/EMD

Communications Plan

Source(s) for example outreach messages (or attach example messages to this plan)	Basic message templates on file with Deputy Incident Manager. Modified for specific situations. Media toolkit. (https://www.healthvermont.gov/file/env-ch-hot-weather-media-toolkitdocx)
Who is responsible for customizing and sending outreach?	*EMD/Selectboard Chair, EMC*
How will outreach be sent to the community?	Town website (https://www.pantonvt.us/), Front Porch Forum, VT-Alert as required
When should messages be sent?	*Informational:* Before seasonal change and reminder during season *Advisory:* When predicted event is outside the norm
Other communications notes	Town Hall Phone: (802) 475-2333 NON-EMERGENCY NUMBERS: Addison County Sheriff's Dept 388-2981 Vergennes Area Rescue Squad 877-3683 Vergennes Fire Department 877-3201 Vergennes Police Department 877-2201 Vermont State Police 388-4919 *Emergency Shelter Activation:* Town Hall with shelter hours posted on town website, in Front Porch Forum, and in VT-Alert message Location: 3176 Jersey Street, Panton, VT, Phone: (802) 475-2333 Emergency Phone: 911

Community Cooling Facilities

	Locations	**Conditions for activating**	**Additional notes**
Cool places (building with air-conditioning operating as usual during normal hours)	Panton Town Hall (3176 Jersey St)	Heat Advisory, Daytime hours	Open Regular hours Monday-Friday, 8am-5pm Has bathrooms, heat pumps, ADA accessible ramp entrance
Cooling centers (A "cool place" or other building specifically advertised for cooling that offers extra amenities during periods of hot weather)	Panton Town Hall (3176 Jersey St)	Heat Advisory, Extended hours as needed	Telephone: (802) 475-2333 Large open room with bathrooms
Cooling shelters (An air-conditioned building providing overnight accommodations)	Town Hall (3176 Jersey St)	Heat Emergency, Open as needed	Request Addison/Rutland Medical Reserve Corps for additional staffing (mrc@vermont.gov or Beate Ankjaer-Jensen, 802-557-5589 beate.ankjaer-jensen@vermont.gov
Outdoor cooling sites (outdoor locations providing shade, swimming/spray water, and/or drinking water)	Panton Town Beach (end of Adams Ferry Road, Panton	Open daily during daylight hours	Lake Champlain swimming area Cautions: Blue-Green Algae, No lifeguard, boat traffic
(Other cooling sites in adjoining municipalities)	Button Bay State Park (5 Button Bay State Park Rd, Ferrisburgh) swimming pool with lifeguards	Open May 27 - 2nd Monday in October Pool Hours are 12 PM - 5 PM until September	https://www.vtstateparks.com/buttonbay.html
	Sam Fishman Pool (43 East St, Vergennes)	Hours of Operation: 12pm-8pm	https://tinyurl.com/239h5pnn Phone: (802) 870-7942 Phone: 802-475-2377

Response plan for people needing extra assistance

Resource	Activation plan	Response plan
Citizens Assistance Registry for Emergencies, CARE (https://e911.vermont.gov/care).	If Heat Warning is issued, Primary Lead/Local Emergency Management Director will request the CARE database for the municipality.	Primary Lead/EMD and Secondary Lead/EMC will contact each individual and arrange assistance as needed.

Activity modification/cancellation plans

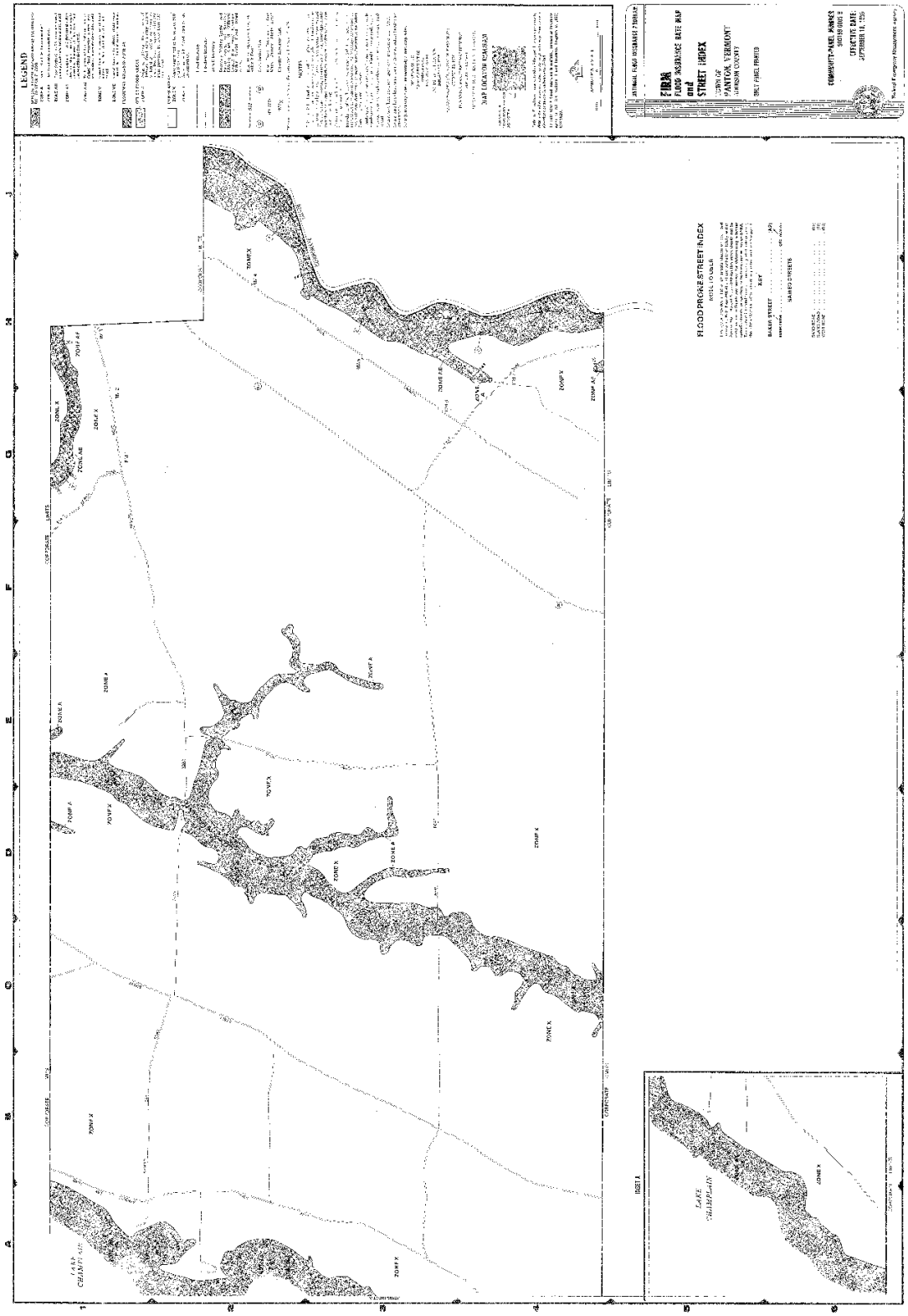
Trigger	Modification/cancellation plans
Heat Advisory	Communicate with town staff and volunteers on the issue. Ensure sufficient water, shade, and rest breaks are provided for any town-sanctioned outdoor activities. Consider shortening, modifying, or cancelling activities as needed.
Heat Warning	Communicate with town staff and volunteers on warnings Cancel town-sanctioned outdoor work, recreational, and afterschool activities, unless sufficient water, shade, and rest breaks in a nearby air-conditioned facility can be provided.

Emergency personnel mobilization plans

Resource	Modification/cancellation plans
Fire and Ambulance	Notify contracted services with town requirements Addison County Sheriff's Dept 388-2981 Vergennes Area Rescue Squad 877-3683 Vergennes Fire Department 877-3201 Vergennes Police Department 877-2201 Vermont State Police 388-4919
Medical Assistance	Call 9-1-1 Contact Vermont Emergency Management State Watch Officer, 800-347-0488

Appendix 3. FEMA Flood Insurance Rate Map and Zoning Language

Number 5001690005B, effective 9/18/1986



(Available at https://msc.fema.gov/portal/search?AddressQuery=Panton%20VT)

Flood Hazard Zoning Language from Panton 2017 Zoning Regulations

Available at https://www.pantonvt.us/governance/zoning/zoning_regulations.php

Section 907: Conditional Uses In Flood Hazard Area

All new construction, substantial improvement, and development uses prescribed the Town of Panton Zoning Ordinance that do not meet the requirements of Section 906 and fall within the designated area of special flood hazard are permitted only upon the granting of a conditional use permit by the Development Review Board in accordance with the procedures and requirements of Sections 910, 911 and 912 of these regulations.

Section 908: Permit Requirements and Application Procedures

Permits are required for all proposed new construction, substantial improvements, and other developments, including the placement of mobile homes, within all lands to which these regulations apply.

All zoning permit applications shall be submitted to the Administrative Officer, on forms furnished by them, who shall determine, on application, whether or not the proposed development is located within the area of special flood hazard by the procedures established in Section 905 of these regulations.

If the proposed use will be located in the areas of special flood hazard and meets the requirements of Section 906 of these regulations, the Administrative Officer shall issue a permit.

If the proposed use does not meet the requirements of Section 906, the Administrative Officer shall refer all applicants to the Secretary of the Development Review Board.

Section 909: Records

The Administrative Officer shall maintain a record of:

1. the elevation, in relation to mean sea level, of the lowest habitable floor, including basement, of all new construction or substantial improvement of structures and whether or not such structures contain a basement; and
2. the elevation, in relation and to mean sea level, to which such structures have been flood proofed.

Section 923: Definitions Specific to the Floodplain Area

Substantial Improvement (page 54): Any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either (a) before the improvement or repair is started, or (b) if the structure has been damaged, and is being restored, before damage has occurred. The term does not, however, include either (1) any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions, or (2) any alteration of a structure listed on the National Register or Historic Places or a State Inventory of Historic Places.

Appendix 4. Wind Scales

Beaufort Wind Scale				
Force	**Wind (mph)**	**WMO Classification**	**Appearance of Wind Effects**	
			On the Water	**On Land**
0	< 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	13-18	Moderate Breeze	Small waves 1-4ft becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	19-24	Fresh Breeze	Moderate waves 4-8ft taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Larger waves 8-13ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	32-38	Neal Gale	Sea heaps up, waves 13-19ft, white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Moderately high (18-25ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	47-54	Strong Gale	High waves (23-32ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Very high waves (29-41ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, considerable structural damage
11	64-72	Violent Storm	Exceptionally high (37-52ft) waves, foam patches cover sea, visibility more reduced	Very rarely experienced on land, accompanied by widespread damage
12	73+	Hurricane	Air filled with foam, waves over 45ft, sea completely white with driving spray, visibility greatly reduced	Devastation

The Beaufort Wind Scale is a tool to measure wind speeds and anticipated effects.
Source: http://www.spc.noaa.gov/faq/tornado/beaufort.html

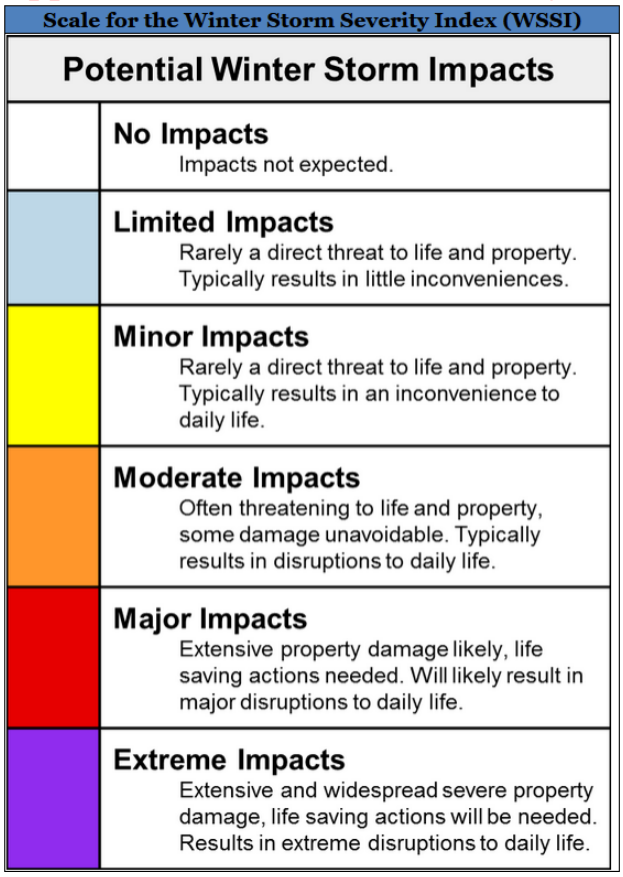
Saffir-Simpson Hurricane Wind Scale				
Tropical Depression		≤38 mph, ≤33 knots, ≤62 km/h	**Tropical Storm**	39–73 mph, 34–63 knots, 63–118 km/h
Category	**Wind Speed**	**Types of Damages Due to Hurricane Winds**		
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap, and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.		
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.		
3 (Major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built frame homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.		
4 (Major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.		
5 (Major)	≥ 157 mph ≥ 137 kt ≥ 252 km/h	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.		

Source: https://www.nhc.noaa.gov/aboutsshws.php

Enhanced Fujita Scale of Tornado Strength			
Scale	**Wind Speed**		**Types of Damages Due to Hurricane Winds**
	mph	km/h	
EF0	65-85	105-137	*Minor or no damage.* Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86-110	138-177	*Moderate damage.* Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	178-217	*Considerable damage.* Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	218-266	*Severe damage.* Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166-200	267-322	*Devastating damage.* Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.
EF5	>200	>322	*Extreme damage.* Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks, and train cars can be thrown approximately 1 mile (1.6 km).

Source: http://www.spc.noaa.gov/efscale/ef-scale.html

Appendix 5. Winter Storm Severity Index



https://www.weather.gov/ict/WSSI_Overview

The WSSI is broken down into six components that are individually weighted based on the WSSI categories and then summarized into overall severity:

- **Snow Amount:** to depict severity due to total amount of snow or rate of snowfall accumulation. (Adjustments are made based on climatology and urban areas, e.g. 4" of snow in Atlanta is more severe than 4" in Minneapolis.)
- **Snow Load:** to depict severity due to total weight of snow on trees and power lines.
- **Blowing Snow:** to depict severity mainly to transportation due to blowing and drifting snow.
- **Ice Accumulation:** to depict severity of transportation and downed trees/powerlines due to the accumulated ice in combination with wind.
- **Ground Blizzard:** to depict severity to mainly transportation of ground blizzards that develop due to a pre-existing snowpack and strong winds.
- **Flash Freeze:** to depict severity primarily to transportation of situations where temperatures rapidly fall below freezing during precipitation.