Town of Panton, Vermont



Single Jurisdiction All-Hazards Mitigation Plan

Final Plan Adoption Date: / /2023 *FEMA Approval Date: / /2023*

Panton Local Hazard Mitigation Plan 2023
Executive Summary

The Town of Panton began work on updating its All-Hazards Mitigation Plan in 2022 and 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.

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 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 GMP 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 previous 2018 hazard mitigation plan adoption. 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 feasibility.

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 in order 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 phytophototoxic 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 LEMP; maintain facilities and supplies at Town Hall so that it can be used as a local cooling shelter and 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 & protective supplies; Adopt & update a municipal Continuity of Operations Plan.
- **Accident or Fire affecting Solar Facility and/or Battery Storage**: Work with Green Mountain Power to provide regular trainings to local Fire Departments; Maintain awareness of VT Alert in order to notify nearby residents in the event of an incident.
- **Severe Winter Storm:** Maintain and enforce standards for snow loading and ice accumulation in building code; provide education materials to town residents about emergency supplies and preparation measures; Support continued development and expansion of Green Mountain Power "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 dynamic and should not be static. 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 5 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 municipal strategies.

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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 Requests for Proposals on September 14, 2022 and selected the Addison County Regional Planning Commission (ACRPC) as a consultant to update the Local Hazard Mitigation Plan 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 mitigation planning committee:

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

The committee met **January 19, 2023** to review the Hazard Mitigation Plan components and requirements and develop a strategy for outreach to public 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 Previous Hazard Mitigation Actions (from the 2018 plan) and posters were placed at Town Meeting Day for citizen 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 associated with the hazards identified.

The final plan draft was sent to the Town Selectboard for their **November 27, 2023** regular meeting. Input on the draft plan was requested from the Town Selectboard and Planning Commission during open meetings. The town also made the plan available on its website www.pantonvt.us to reach a broader distribution. A copy of the draft plan was sent via e-mail to the surrounding towns of Addison, Vergennes, Ferrisburgh and Waltham town clerks for distribution to appropriate town officials on November 28, 2023 with a request for review and edits by January 3, 2024. No comments were received.

Based on comments from the complete public process, the draft plan was further edited and forwarded to Vermont's State Hazard Mitigation Officer for comments and preliminary approval on January 5, 2024. Suggested edits were identified by the SHMO on **XXXXXXDATE**. Appropriate edits were made and the draft plan received tentative selectboard approval before being sent back to the SHMO for a second review before being passed on to FEMA reviewers. Comments were received back from FEMA reviewers on **XXXXXXDATE**.

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 communities to rank their own vulnerability priorities was displayed at Town Meeting, March 7 2023 (Appendix 1)
- A copy of the draft plan was made available along with a comment sheet at the Town Office on XXDATE 2023. The Town Clerk was asked to encourage the public to read and comment on the draft plan. (No comments received)
- 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. No comments received.
- 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 XXXXXXXDATE. The clerks were instructed to share the notice with the select boards, planning commissions and the general public. Comments were requested to be sent to Andrew L'Roe at ACRPC. No comments were received.
- A copy of the draft plan was provided to the State Hazard Mitigation Office for comments on XXXXXXXDATE. Comments were received on XXXXXXXDATE
- An updated copy was sent to DEMHS 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.

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)
- 2018 State of VT Hazard Mitigation Plan (provided a listing of statewide hazard concerns)
- 2023 Draft State of VT Hazard Mitigation Plan
- 2022 Report of the State Fire Marshall (provided data to inform structure and wild fire 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 FIRMS dated 1986 (incorporated into maps)
- VT Center for Geographic Information data layers (incorporated into map products)
- State of Vermont Tier II reports, 2020-2022 (reviewed for Section 4.3)
- Panton Annual Town Reports 2013-2023

2. Local Background

2.1. Community Background

The Town of Panton makes up 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. 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 the town is only five miles from the eastern foothills (elevation 1000-2000' above sea-level) of the Adirondacks, and the eastern height of land is within 20 miles of the Green Mountains. Panton is bordered on the west by a deep section of the lake (120 to over 200 feet deep in sections), which is typically 3 to 5 miles wide at this point.

The moderating influence of the Lake's warmer temperatures in fall keeps the valley floor more temperate, extending the growing season to over 150 days, which is almost a month longer than that of the upland areas of the state and spans from April to October in some years, 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) has put Panton in Zone 5, which has an average annual minimum temperature of between 15-20 degrees Fahrenheit. The Green Mountain range to the east induce orthographic cooling, creating frequent cloud cover in the region and often signal weather changes associated with changing frontal systems of low and high pressure.

There are two major stream systems in Panton: Dead Creek and Otter 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 area is considered a significant deep rush and cattail marsh system

With the road network relatively unchanged since the early 1900's, any and all growth has occurred almost exclusively along these routes, creating linear development patterns, almost exclusively residential in character. There are 305 housing units in Panton, including eight seasonal homes. There is a campground, farm store, and several home occupations.

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. While the pattern of residential development will continue along the road network, it is envisioned that future development that is more creative may allow "back lot" and clustered type of residential development, which will preserve the rural character, open spaces, and viable farm land. Area for more intensive development via smaller lot size is a consideration that the town should address, particularly as pressures increase in the future. The Planned Development Ordinance and the subdivision regulations both encourage/support clustered and innovative development patterns.

There is one village center in Panton, where the Town Hall, Baptist Church, is located. It is the only Commercial Zone in the town, and formerly contained a general store and gas station. A state-owned wildlife conservation area, known as the Dead Creek Wildlife Management Area extends along Dead Creek from the south and comprises 350 acres of land and water.

The mountains to the west create a rain (moisture) shadow that keeps precipitation levels among the lowest in Vermont. Panton, fortunately, has municipal water service, as part of the Vergennes Panton Water District, with the water pumping facility located in Arnold Bay. The Vergennes-Panton Water District was established and began operation in 1972 with the construction of the Arnold Bay Treatment Plant in Panton. This facility serves the bulk of Panton, all of Vergennes and smaller sections of Addison, Ferrisburgh, New Haven and Waltham. It was last upgraded in 2010. The water district relies on Lake Champlain for its supply, so volume is not a concern. Water quality is an issue and of particular concern is the zebra mussel influx, which threatens intake pipes.

The Vergennes-Panton Water District maintains several main distribution lines, with neighborhoods and other specific end users extending the lines as private system extensions. The Vergennes-Panton and Tri-Town lines are interconnected to allow them to serve as backup systems for each other in an emergency situation. Not all contingencies are covered as a disruption of the water line, such as a major break, has a possibility of halting water service. The possibility of a major break is low and the water district has shown their ability to deal with such matters in a timely manner.

A potential groundwater protection area exists in Panton constituting the entire shore land area adjacent to Lake Champlain that is considered a recharge area due to the presence of groundwater flows towards the Lake itself. A default wellhead protection area is also located in a 3000' radius centered on the Arnold Bay Water Plant intake location. Another source water protection area is located in the southeast section of the town in the Otter Creek watershed.

Population

Over the past 20 years, Panton has experienced trends in the makeup of its population similar to those in communities throughout Vermont. The 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. Median household income is higher on average ($83,594), compared to the rest of Vermont ($67,674).

Housing

In 2022, there were 277 year-round housing units, including 262 Single Family Dwellings, 12 Mobile Homes, and 3 Multi-Family dwellings. There are an additional 26 camps, nearly all along the Eastern 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, near the north-eastern boundary with Vergennes. There are at least 5 short term rentals (AirBnB’s) that are located along the lake.

Public Infrastructure and Personnel

Panton Town Hall and two locations in Vergennes have been designated as emergency shelters, and the town office as an emergency operations center. Panton's emergency plans indicate that flooding or a winter storm would be the most likely disaster the town would face.

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.

Panton has a modest road network with a total of 27 miles of roads in Panton. 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 3 roads, and 2.8 miles of Class 4 roads in town. There are also a number of private roads in Panton. The Town Garage, which is located on Panton Road on a six-acre lot, was built in 2004 and should serve the town well into the future. There is one private air strip, the Staton Airport, located near Lake Champlain on the southwestern corner of the municipality.

In addition to its elected Select Board 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 Fletcher Allen Health Care in Burlington.

The town has an annual contract with the **Addison County Sheriff's Department** to provide various law enforcement services, particularly in the enforcement of posted speed limits and to enforce its Illegal Burning & Disposal Ordinance. 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 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

There are 3 solar facilities located within Panton. The Green Mountain Power Corporation provides electrical distribution for the Town of Panton through two substations: one located in Vergennes serves the north and west areas of town, another in Weybridge serves structures on the eastern side. No major transmission lines travel through the town.

At the end of 2016, a 5.0 MW Solar Project constructed on the North side of Panton Road became operational. The development, construction and financing were managed by EDF Renewables for Green Mountain Power (GMP) and located on private property. 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 owned and run by GMP in Vermont.

As part of the project, GMP agreed to upgrade the Town Office building with new LED lights and electric heat pumps. They also installed a streetlight at a nearby intersection and installed two Level 1 & 2 electric-vehicle chargers at the park and ride parking lot across from the town offices.

To facilitate the solar installation, Green Mountain Power upgraded the electric distribution lines and poles along Panton Road, relocating the above ground infrastructure to the south side of the roadway with taller structures. This reconstruction addressed drainage problems as the poles were being undermined by the stormwater runoff flowing through the existing ditch.

GMP also invested in the creation of a "Microgrid" that will keep power on during power outages and uses batteries to lower 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 planning to expand the Microgrid to up to 900 customers, including critical infrastructure at the Panton-Vergennes Water Treatment Plant.

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

Wireless phone service in Panton is spotty with the eastern side of town, near Route 22A having somewhat better coverage. The main coverage is AT&T and T-Mobile, from a transmitter

location on the Water Tower in central Vergennes. There is also some coverage by. Verizon and US Cellular customers have no reception within the town boundaries. There are no cell tower locations within Panton, and the other nearest transmitters have limited range and are located in the Basin Harbor area of Vergennes and Route 17 East in Addison.

Local wired phone service in Panton is provided by Champlain Valley Telecom. There is a central switching center located on Panton Road near Panton Four Corners, operated by Champlain Valley Telecom.

Internet access is available in most locations in town but varies considerably in speed. Since there is no cable television infrastructure in Panton, provision of high-speed access over cable is not an alternative. On the western side of town, service is available through Waitsfield and Champlain Valley Telecom (WCVT) service.

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 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. Over 53% of town is already served via direct connection to fiber (optic) or coaxial cable, so the CUD has not made Panton a priority for installation.

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

Zoning Regulations

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 statues, ordinances, rules, regulation, permit, easement or agreement, the provisions of these regulations shall control.

The Zoning Regulations contain a set of Flood Hazard Area Regulations in order 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 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.

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 church. It is one location in town where additional density may be considered in the future, although the availability of 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.

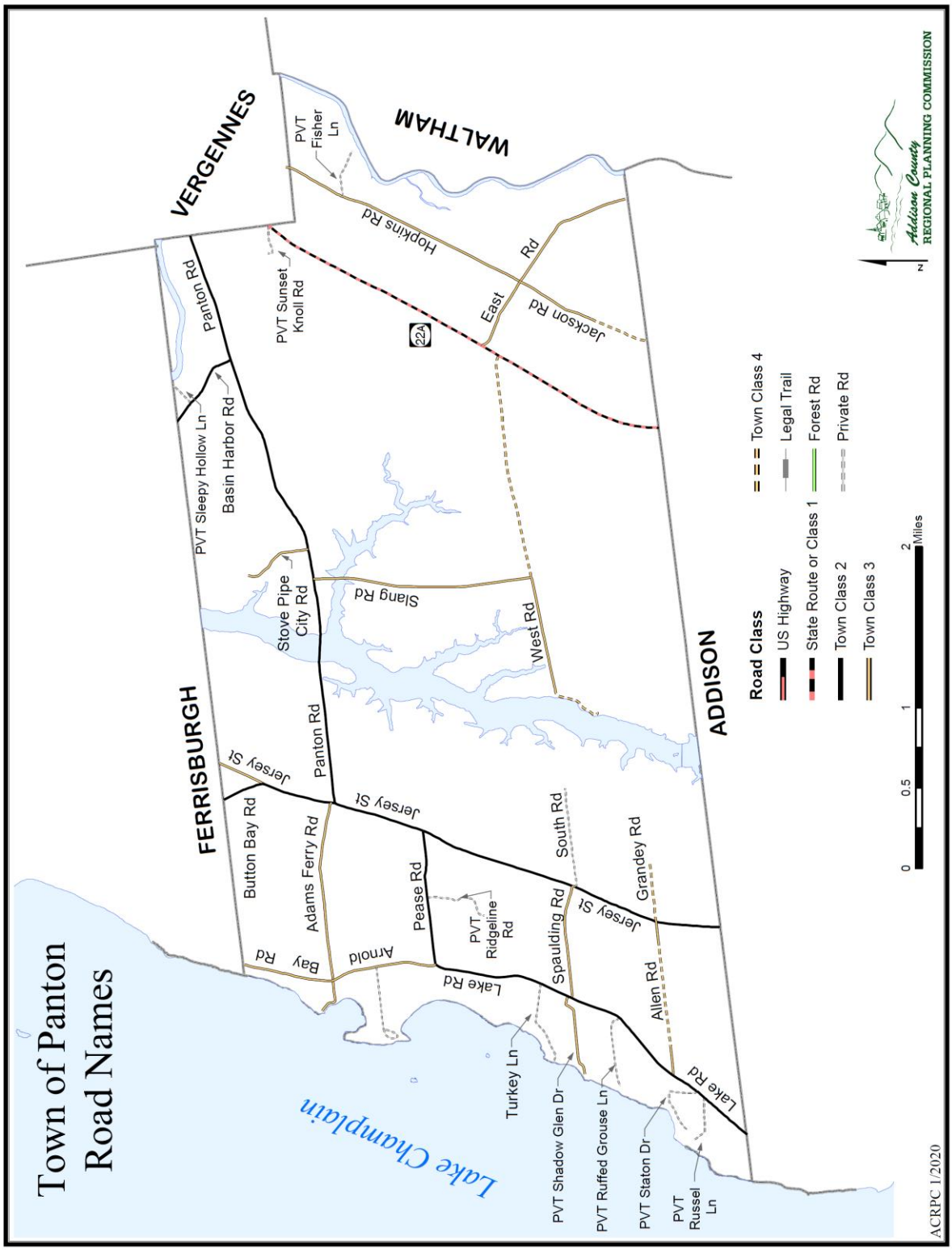
5) **Floodplain Area** representing the federally determined special flood hazard area 1% (aka 100-year) floodplain zones surrounding both Dead Creek and the western edge of Otter Creek. These areas are limited in size and contain other constraints for development and thus will remain sparsely developed.

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 2 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.

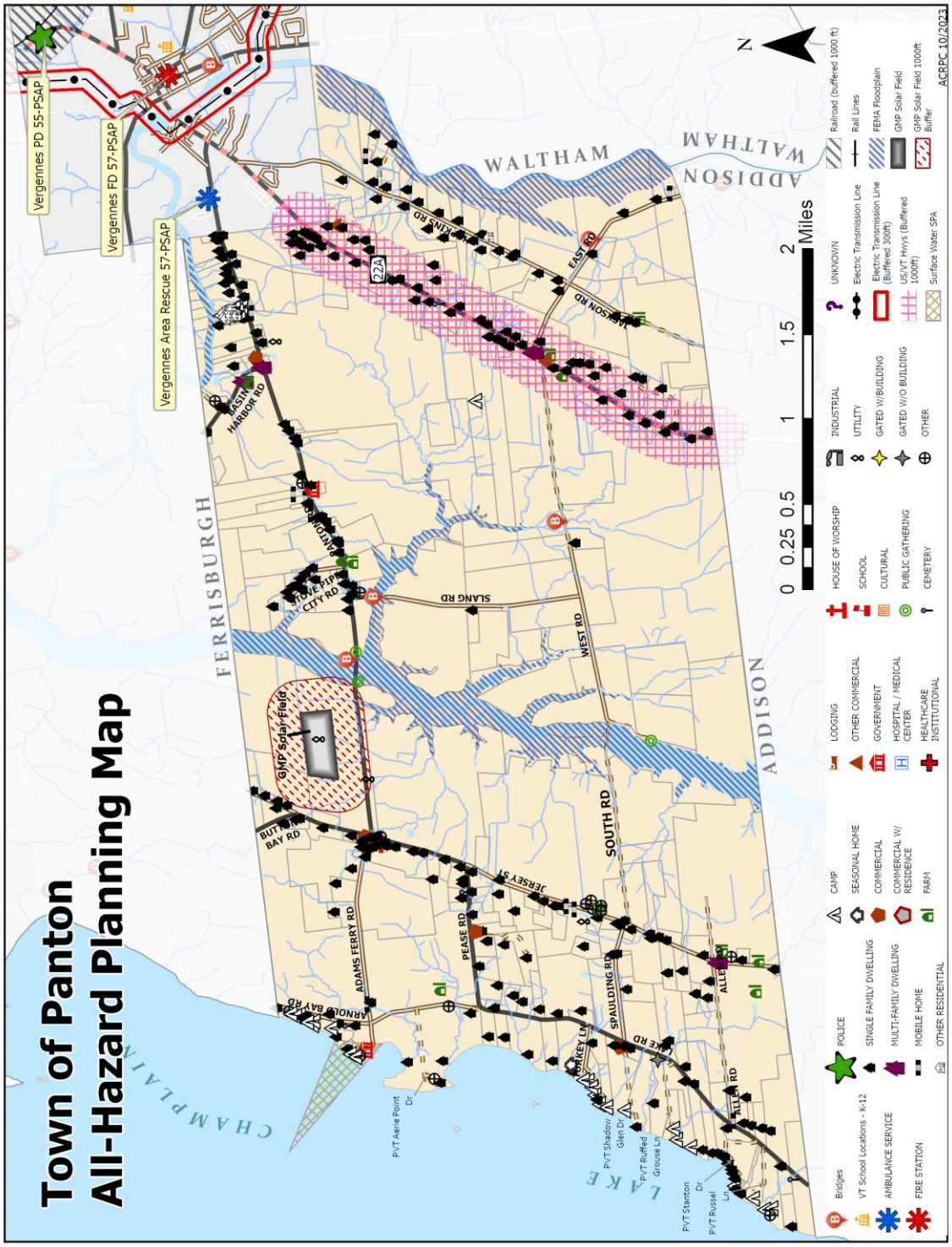
Requirement 44 CFR § 201.6(c)(2)(ii) (NFIP Repetitive Damage)	**Requirement 44 CFR § 201.6(c)(3)(ii) (NFIP Participation and Compliance)**

2.2. Community Maps

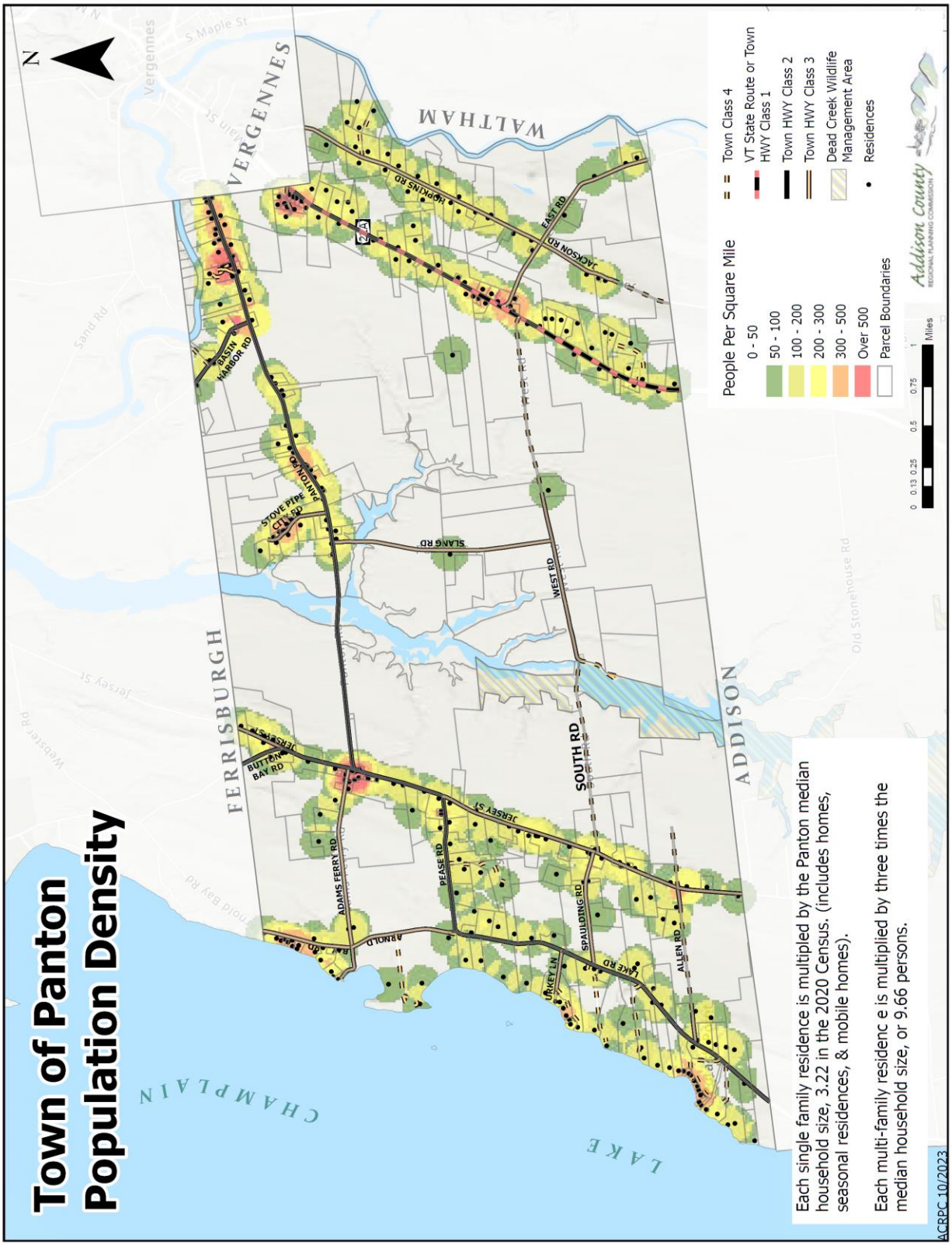
2.2.1. Municipal Road Names Map



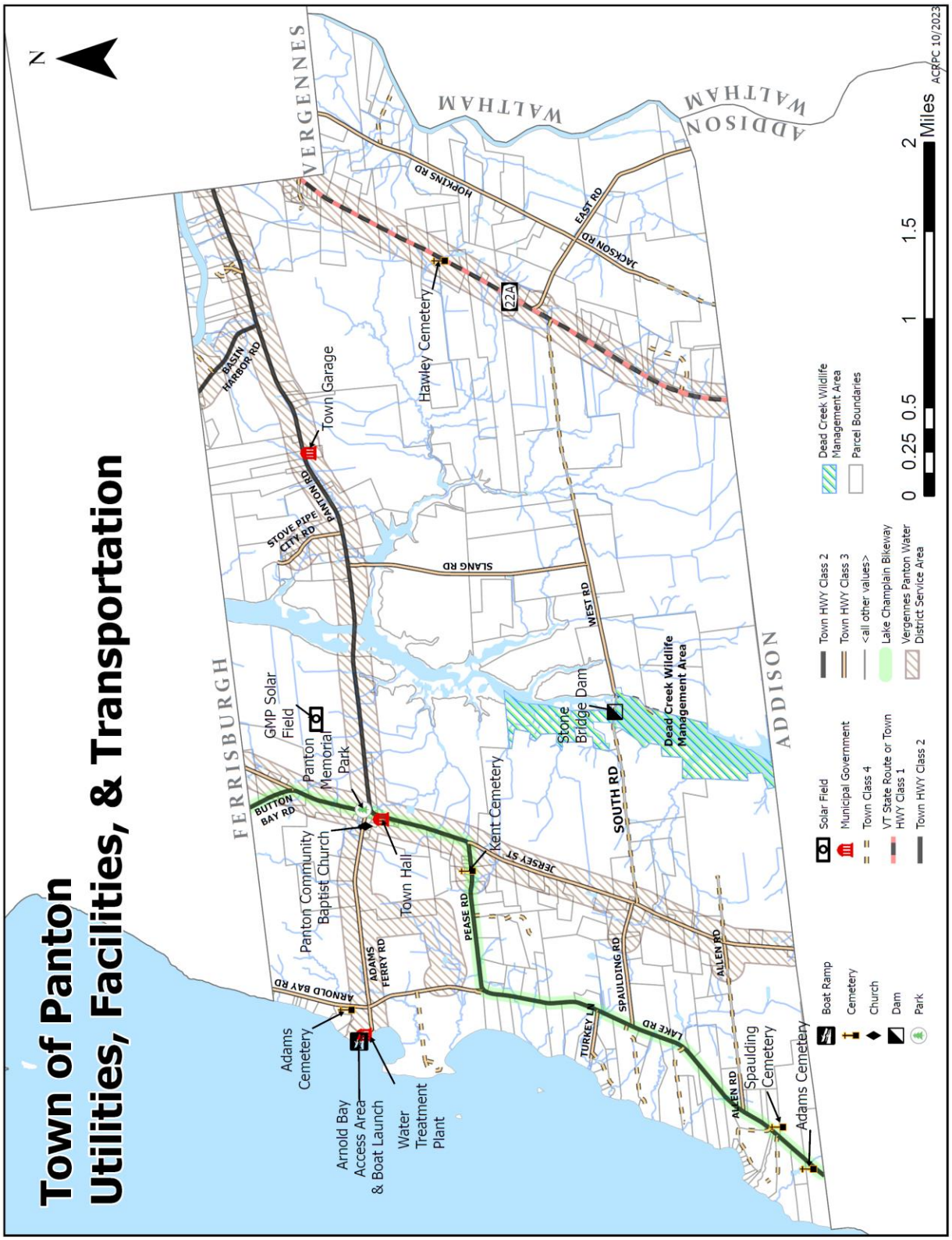
2.2.2. All-Hazards Planning Map



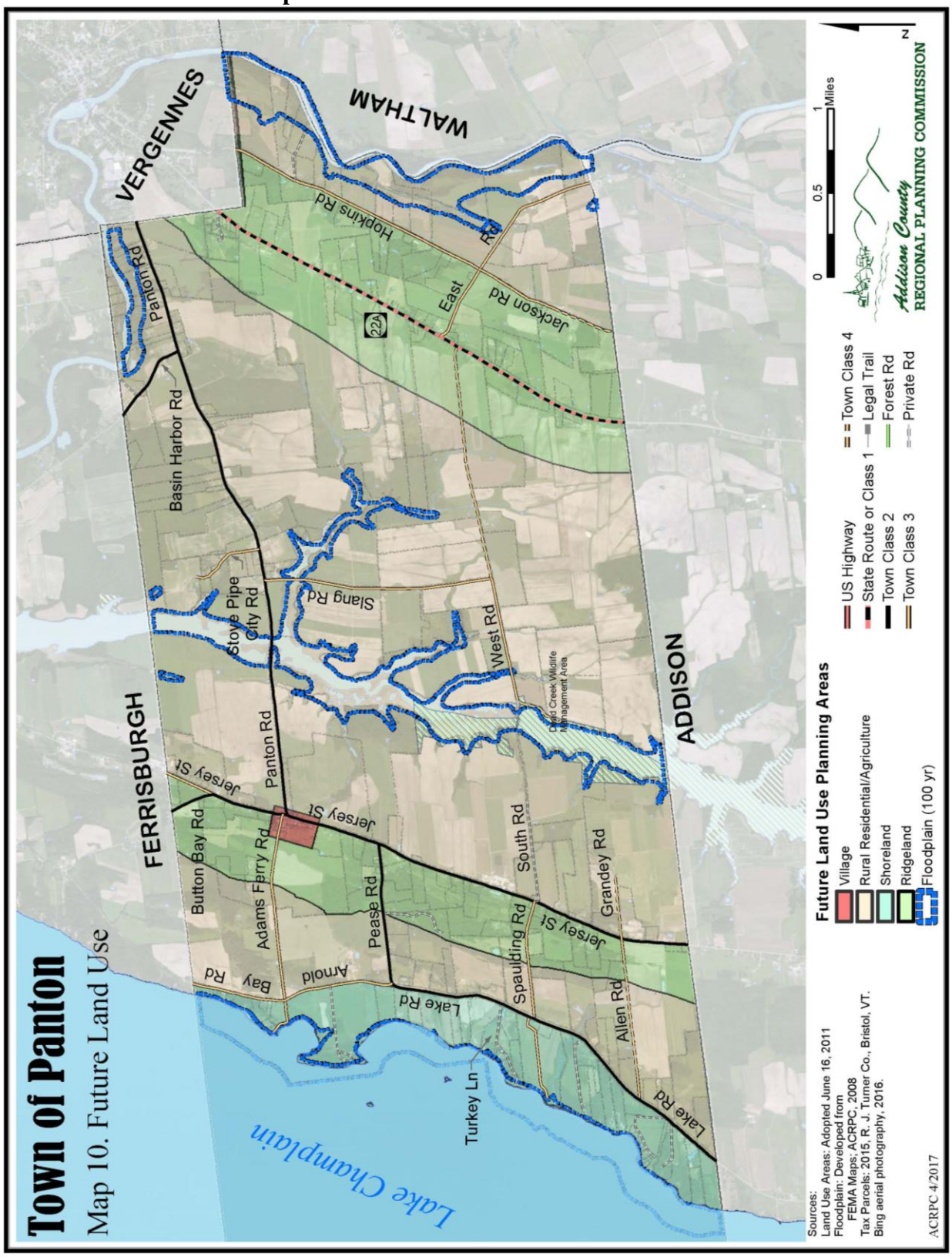
2.2.3. Population Density Map



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 degrades 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 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 spiritual 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 general public about water quality and stream dynamics
- Provide communities 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, storm-water, 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-causing 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 multiplied by Probability. This score was divided by 4 to increase the scoring legibility and rank hazards on a 12-point scale.

In an effort to validate the risk assessment completed by the Steering Committee, community input was solicited through both an online survey and interactive display at Town Meeting Day to solicit input. The priority scores indicated by community members were very similar to those determined by the steering committee and comments 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 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 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 storm

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 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 effects and financial damage 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.

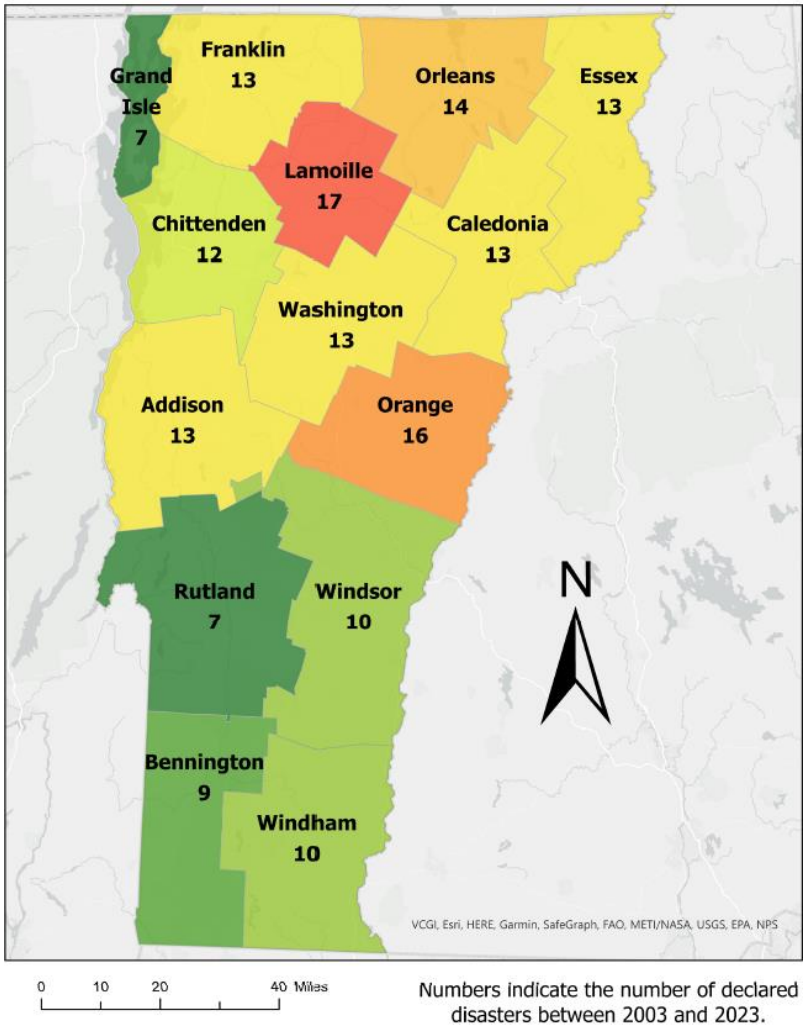


Figure 1. Federally Declared Disasters in Vermont by County, 2003-2023

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	Unavailable
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

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.

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)

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, however, several local farms likely store fuels in excess of the quantities which require reporting.

Highway accidents, however, could result in a release of hazardous materials and accident locations of concern to the committee are identified in the section on Highway Accidents. Generally, with the constant movement of petroleum in the form of home heating oil, any location along a town highway or at a residence could be the site of a spill either as a result of an accident or during delivery. As previously mentioned, Rte. 22A is a major route for fuel and gasoline transport along the western part of Vermont.

Highway accidents are possible along all highways in town but are particularly noticeable along State 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 the Addison Region. 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, Rte. 22A joins the highly travelled US Rte. 7.

Just prior to the Vergennes line, the wide-open farm fields begin to rapidly give way to a more densely packed area. It is in this transition zone that many accidents occur as speeding vehicles need to rapidly reduce speeds through the city of Vergennes

Panton Road and Lake Road are the most heavily travelled town roads and experience their share of highway accidents as well though the frequency is much lower. The committee specifically identified the intersection of Panton Road and Basin Harbor Road as well as where the Panton Road crosses Dead Creek as particularly noticeable accident locations. In addition, several 90-degree turns are the site of accidents as the main flow of traffic follows Panton Road to Jersey Street, to Pease Road and onto Lake Road. Each of these intersections pose a high risk to drivers unaware of the path this traffic route takes.

Extent

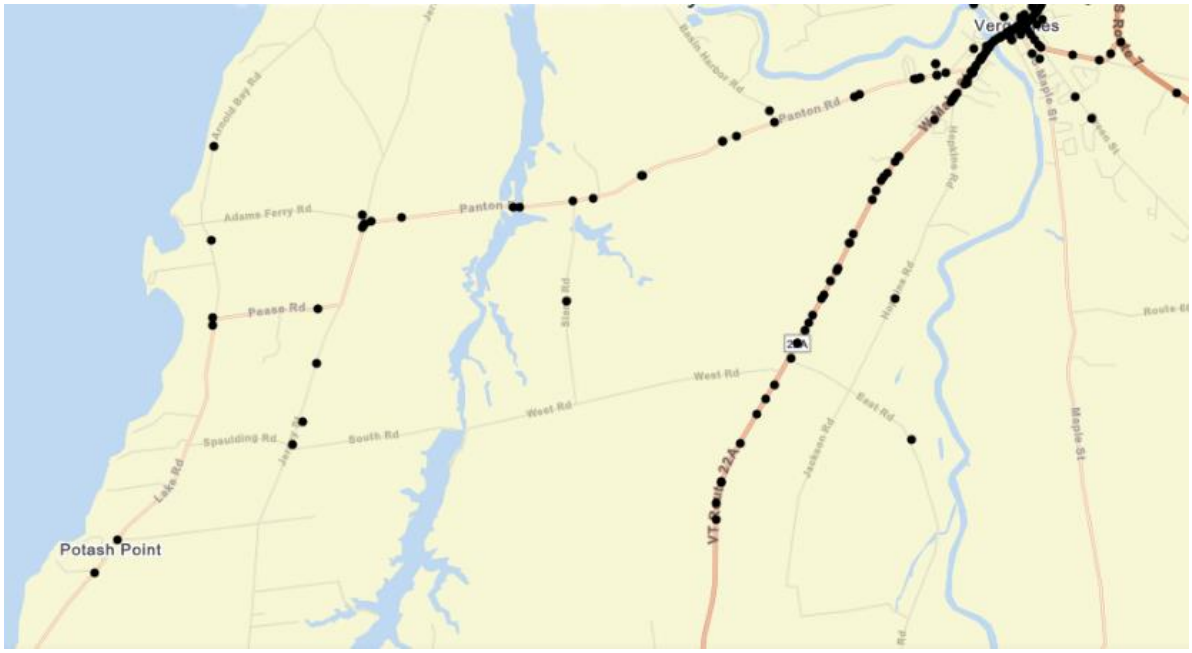
Truck Traffic on Rte. 22A poses the highest risk in town due to both the volume and types of cargo being carried. The majority of gasoline and fuel oil delivered to northwestern Vermont by truck travels Route 22A from Albany N.Y. to Burlington and points north. A worst-case scenario of a truck rollover involved with other vehicles could result in fires, environmental damage, and road closure for hours or even multiple days. This could potentially detour traffic to Jersey Street and Panton Road through the village and other residential areas.

A 1000-foot buffer was superimposed over state highways and all class 1 and 2 town roads that represent a possible impact area should a large hazardous material spill occur on these highways. Based on this analysis, there are 61 structures that could be impacted should an incident with a vehicle carrying Hazardous Materials occur. These are primarily residential structures. Essential facilities which could be impacted by such a spill include the Panton Town Hall/Office or the Vergennes/Panton Water District Pumping Station.

Previous Occurrences:

No major incidents involving large-scale hazardous materials spills have occurred in Panton though numerous incidents have occurred elsewhere in the region and state. Over the last decade, the majority of vehicle crashes have occurred on the north-south Vermont Route 22A on the eastern side of town, which is a major transport and commuter route. Route 22A in Panton is used by many trucks, including some carrying hazardous materials to industrial facilities Vergennes and other locations in northern Vermont, and has been the only area with documented heavy truck crashes in the last twenty years according to the Vermont Agency of Transportation.

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:

Increases in truck traffic seem inevitable as long as the population demands more products and online shopping is more convenient and available that local stores. A lessening in fuel use is the goal of the State of Vermont energy plan, which may limit vehicle usage, as well as transportation of fuel.

Vulnerability:

While the Vergennes Fire Department has training in hazardous materials response, the entire State of Vermont is highly dependent on the limited resources of the State's HazMat team. Fortunately, highway safety is improving both in alignments of the highways themselves and in safer vehicle designs. Until major overhauls of sections of highway can be completed, Panton will need to continue to rely on signage and enforcement of speed limits to keep the numbers of accidents in check.

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

Extent:

Lightning strikes in western Addison County, Vermont average between 4-6 strikes per square kilometer each year based on data collected by NASA satellites between 1995 and 2002. Within the Town of Panton, these numbers would extrapolate into between 225 and 350 lightning strikes per year. Another common strike location is at a power line transformer.

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:

Relatively little information has been recorded of recent significant lightning strikes. Statewide, the National Lightning Safety Institute recorded 3 known fatalities due to lightning in the period from 1990-2003.

Given the estimated numbers of lightning strikes in Panton, it is certain that there have been strikes on homes and barns resulting in fires. In August, 2023, a lightning strike at the Whispering Pines campground on Panton Road in the northeast corner of town received a lightning strike that blew off electric meters, caught fire, affected at least three housing units, and required evacuation of residents.



(Photo: Energy meter that caught fire from Whispering Pines lightning strike, 2023)

Future Probability:

It is unlikely that lightning strikes will be reduced over the next few decades. However, if predicted increases in storm numbers and severity are true, increased numbers of lightning strikes would be expected. As newer buildings are built with fire resistant materials the likelihood of fire due to lightning however, is reduced.

Vulnerability Summary:

Panton's susceptibility to lightning strike seems to be relatively stable. While historically, buildings may have been protected from lightning-caused fires by a lightning rod system, these have fallen out of favor in recent years. During that same time period, an increase in fire protection capability has allowed the community to keep their perceived risk at a constant level.

The highest risk area for lightning strikes with the highest resultant damage to the public infrastructure is where public buildings are scattered along Jersey Street in the traditional village center. Loss, due to fire caused by lightning or electrical surge could be quite disruptive to the community if it were to strike either the Town Hall or church located in this area.

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. 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 can overwhelm native species and their habitats, forcing the native species out. They are considered to pose the second greatest threat to biodiversity globally.

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 longhorned 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- insects that cause irreversible impacts on tree health and biodiversity.

Arbovirus-transmitting Arthropods– a group of insects that transmit viral infections through their bites.

Disruptive Terrestrial Plants- These 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, potentially causing serious skin burns.

Tick Increasing Plants– these 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, accidentally 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, especially those to the east. Panton's largest forest blocks are located along Dead Creek and Otter Creek, as well as between Jersey Street and Lake Road. There are some large trees adjacent to Jersey Street and other roads and driveways in town. 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, horsechestnut, 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 a 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 Wolly Adelgid are moving north from southern Vermont and are expected to continue moving as milder winter temperatures have allowed 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 anticipated to be nearly eliminated in the State, replaced by those tree species that thrive in warmer, drier conditions, like oak and pine. Additionally, the changing climate will allow for greater survival and reproduction of forest pest species, as trees that are stressed due to lower water availability reduce their ability to maintain sufficient defense mechanisms, making them more vulnerable to pest invasion and disease.

Vulnerability Summary:

Warming temperatures and an increase in mild winters can allow insect borne diseases greater access to Vermont with increased chances of overwintering. These introductions may not be invasive, but it is a shift in species distribution and range that could threaten human health in the state. As the global climate continues to shift at a rapid rate, species better adapted for warmer climates will continue to proliferate, with changes in ecosystem composition threatening to 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:

Across Vermont, high winds are most often seen accompanying severe thunderstorms. In Addison County these storms usually originated from the west, southwest, or south. Panton's location is somewhat shielded by large storms coming directly from the west by the Adirondack Mountains and Lake Champlain, though squall line thunderstorms moving in a line from the southwest are not uncommon. Tornados that form over water are rare, though waterspouts– a tornado that originates over water instead of land- can occur over Lake Champlain and move inland.

Areas of Vermont, like Panton, that are not located at the base of the Green Mountains are less vulnerable to wind-related hazards due to downslope windstorms. Large-scale hurricanes affected the entire region are infrequent. As a hurricane moves inland from the coast, it loses wind speed and is often downgraded to a tropical storm by the time it reaches 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 in excess of a mile wide and 50 miles long. Straight-line winds from thunderstorms are more common, but usually more limited in scale.

Previous Occurrences:

In Vermont, high winds are most often seen accompanying 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 of similar damage and wind speeds; however, they are not rotating like the winds of a tornado.

Thunderstorms and associated hazards can occur anywhere at any time of the year in Vermont; however, 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 summer:

	January	February	March	April	May	June	July	August	September	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 in Addison County are rare, but can occur. In July 2022 a storm system produced two tornado touchdowns just south of Panton in Adison and Waltham. The tornadoes caused property damage, along with uprooting and snapping off several trees in their path. The path length of the Addison tornado was 1 mile long and up to 50 yards wide, while the 2nd tornado path was 0.7 miles long and 25 yards wide. Waterspouts– tornadoes that originate over water instead of land- are also extremely rare, but can occur on Lake Champlain. In 1970 a waterspout moved from Lake Champlain to the southern part of Swanton, Franklin County where it struck a cabin and caused multiple injuries.

Large-scale wind storms have affected wide portions of the state multiple 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 has only had NOAA-documented high thunderstorm winds causing ~$5,000 of property damage on August 31, 1993.



Future Probability:

The occurrence of wind events is considered to be **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, and thus block transportation routes, cut off electricity and telecommunication networks, and destroy property. The situation described can be life threatening when emergency and medical services are disrupted, due to either transportation or telecommunication errors. Thus, those who rely on electrical life support systems are particularly vulnerable in the case of a power outage, as well as those who rely on electrical heating and cooling systems. 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. However, during the heat of 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 cities 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 7 documented heat events, primarily during July & August and all since the year 2006:

	January	February	March	April	May	June	July	August	September	October	November	December
Heat	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 degrees above normal. Some daily records that were established for more than 100 years were broken and several daily records were broken by 10 or more degrees. The Winter of 2011-12 had been largely abnormal with temperatures that averaged 4-5 degrees above normal and snowfall was 40-60 percent of normal. This combination caused snow packs across the region to be well below normal or even non-existent by mid-March. For the Maple Sugaring industry this resulted in an approximate $10 Million loss statewide, and significant loss revenue of the ski industry due to a 25-50 percent snow drought and early spring closures.

Even more recently, from June 18-23, 2020 the 2nd longest heatwave in modern history (1900-onward) occurred across portions of NY and VT. Temperatures exceeded 90 degrees for up to 6 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 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 have increase from 9 per year (2010-2022) to **between 13 and 19 per year** (2035-2064)

Vulnerability Summary:

While Vermont is located at the northern border of the country, data indicate that Vermont residents experience heat-related illnesses at temperatures lower than in many other regions. This is likely related to how infrequently hot weather occurs in Vermont, which has several impacts:

- We do not experience enough hot weather for people's bodies to adapt to hotter conditions,
- Many homes in Vermont are not adequately weatherized and do not have air conditioning,
- At a state and community level, we have not developed plans and policies needed to be prepared for hot weather,
- At an individual level, it can be hard to adapt behaviors to stay safe during hot weather, and
- Vermont has a large population of older adults, who are at more risk for heat-related illnesses.

Panton has been identified by the Vermont Department of Health as having a higher population vulnerability than the state average, due primarily to the percentage of Adults 65 and Older Living Alone. Other populations of individuals 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 total 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 as one that 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 that are in excess of 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 possibility of respiratory disease spread.

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 beginning 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. It is anticipated that a more serious strain of the usual flu will occur some year and that vaccines might not be ready in time to combat rapid spread.

The COVID-19 pandemic beginning in 2020 led to a complete disruption of daily life within Vermont. A state of emergency was issued on March 13th, 2020 by Governor Phil Scott 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, closure of 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 14th, 2021 when 80% of Vermont's eligible population (those 12 and older) received at least one dose of COVID-19 vaccine, in accordance with the State's Vermont Forward Plan. There have been more than 150,000 cases and 900 deaths due to COVID-19 in Vermont.

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

Other vector-borne diseases have been noted recently in and near Panton. Panton has had 5 cases of rabies from 2005 to 2022, split between skunks and raccoons. The most recent confirmed rabies case was in August, 2021. Cases were also reported in Ferrisburgh and New Haven in 2019. A Panton resident and her dog were attacked by a coyote in June, 2022, 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 rates of infection. Warmer temperatures allow more diseases and their vectors to expand and establish populations farther north, where harsh winters temperatures previously inhibited expansion.

Perhaps the most significant upward trend in infectious disease cases in Vermont is that of Lyme disease. The Vermont Department of Health reports that the number of reported cases of Lyme disease around the state have increased dramatically over the last decade, and with shortening winters, the potential for infection through tick bites continues to grow. Additionally, Vermont's increase in forest cover could provide a more suitable habitat for ticks and their hosts, which may lead to further spread of Lyme disease.

With both temperature and precipitation expected to increase in Vermont, mosquito vector activity will also likely increase, as well as the vector's period of activity, lengthening 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 most vulnerable to infectious disease include immunocompromised individuals, elderly and young populations, and healthcare workers. Due to weakened immune systems or compounding factors of other illnesses or stressors these populations are at heightened risk of infection and death. 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 affecting Solar Facility or Battery Storage (Vulnerability Score 4)

Location:

At the end of 2016, a 5.0 MW Solar Project constructed on the North side of Panton Road became operational. The solar array is accompanied by an Energy Storage System (ESS) composed of Tesla PowerPacks totaling 1 MW or 4 MWh of storage, one of two such facilities owned and run by GMP in Vermont. The battery system takes up about 4,000 square feet, and includes 10 Tesla Powerpack units. Though rare in these systems, they can experience thermal runaway – a rapid and dangerous release of heat and gases which can lead to self-sustaining fires in lithium-ion batteries.

Extent:

Energy Storage Systems can release substances including Hydrogen, Hydrogen Fluoride, CO2, Ethylene, etc. that can be airborne-inhalation threats. For some lithium-ion battery fires, nearby residents have been asked to shut all windows and turn off ventilation systems due to the hazardous material emitted. The amount of material is relatively small compared to materials being transported for production or disposal, so emergency response guides recommend implementing a 1000-foot buffer and diverting any airborne plumes from nearby residences or highways by using Fire Department fog streams. There are no liquid hazards from the ESS batteries catching fire, but any water used to (try to) extinguish it might contain higher concentrations of lithium, hydrofluoric acid, etc. that might be bad for downstream ecosystems. The current advice from the manufacturer is to let it burn itself out and not try to extinguish.

Previous Occurrences:

There have not been any fires at facilities like this in Vermont. Other Energy Storage Systems fires have occurred in other locations in the United States and elsewhere. The most notable such fire occurred at a 2.16 MWh facility in Surprise, Arizona in April 2019, which had Lithium-ion battery facilities contained 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 day before it was declared under control. A fire broke out in 2022 at the Salt River Project in Chandler, Arizona, a 10 MW energy storage project that uses lithium-ion batteries. In that incident, robots were used to open the doors and enter the facility, allowing the 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, operated by utility PG&E. While that fire was fully controlled within 18 hours, smoke still occurred in the area for several days and California's Highway 1 was shut down.

Future Probability:

The probability of an accident or fire affecting the GMP Solar Facility or Battery Storage is unlikely, but not impossible. Explosions are extremely unlikely for the Panton Energy Storage System and other ESS's that GMP current has in the state because they are open to the air and therefore there is no place for the gas to accumulate. The greatest physical risks of an ESS fire are to first responders, not to the local community, but precautions should still be taken.

Vulnerability Summary:

The GMP Solar Facility and Energy Storage System in Panton is located in an open, rural setting. A recommended 1000-foot buffer 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 likely low, the potential warning time would be low and potential response from neighboring municipality responders could be complex. Furthermore, the relative novelty and the visibility of this location would be extremely high.

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 Storm (Vulnerability Score 4.0)

Location

Severe winter storms are common throughout Vermont and can occur geographically in any part of Panton. Located in the Champlain Valley, Panton is at greater risk for more widespread Ice. Generally, ice storms strike within a particular elevation band depending on temperatures with higher elevations experiencing snow and lower elevations experiencing rain. Panton can fall into this band or may be spared entirely due to its proximity to Lake Champlain. The committee specifically identified Pease Rd, East Rd, Arnold Bay Rd. and Spaulding Rd. 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 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 to Addison County. The Panton hazard mitigation committee identified the 1998 ice storm as the worst that had occurred in the region. Fortunately, the residents of Panton were largely spared the effects of this storm. On December 22-23, 2022, Addison County received high winds, downing power lines and closing roads, followed by cascading temperatures falling into the single digits, with wind chills of zero to the minus 0's, but again Panton were largely spared the effects.

Since 1970, NOAA has documented winter storm-damage across Addison County from a number of events, spanning the period from November to 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
High Wind	4	6	2	2	1	0	1	2	5	4	5	8
Cold/wind Chill	19	6	0	0	0	0	0	0	0	0	0	3
Strong Wind	11	9	4	7	3	0	0	3	0	9	7	7
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/)

The major impacts within the Town of Panton are generally limited to residents impacted by loss of power and the occasional downed tree or branches in the road. Loss of power to the town hall and garage are of concern due to the frequency of losses at these locations. In March 2001 a string of storms hit Panton and the rest of Vermont, beginning with 15-30" of snow on March 5-6, followed by 10-30" on March 22, and 10-20" on March 30.

Future Probability

Warmer temperatures such as might be anticipated with climate change would result in less snow and a higher likelihood of ice in winter. Other predictions indicate that climate change will bring more atmospheric moisture and snowfall, or jet stream alternations 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. Utility company priorities following storms are to repair the simplest fixes which impact the highest total populations as the highest priority. As a result, there is a high risk of extended power failures due to ice storm throughout the Town of Panton.

Green Mountain Power is working on the expansion of a "Microgrid" for the Town of Panton, with a recently constructed large-scale solar array and large-scale batteries providing continuous electricity power to a local grid of residences and town buildings should the main connections to the regional grid fail. There are few tree-lined rural roads and powerlines to add additional risk of ice laden trees falling on power lines, but some areas do exist in the village areas.

The community vulnerability rating for Ice Storm and accompanying widespread power outage is 4.o and is considered a **HIGH PRIORITY**. Widespread power outages have been extensively mitigated by service providers in the past few years following the disastrous Ice Storm of 1998 effectively reducing the community's vulnerability. When combined with projected improvements and "islanding", the community's vulnerability is set to be reduced in the near future.

4.3.9 Downgraded Hazards from previous Hazard Mitigation Plan

Earthquake

All of Vermont and New England is classified as an area with “moderate" seismic activity. 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

These are all predicted to have low to moderate damage to buildings, transportation and utility systems, but minimal casualties and economic loss. The Panton Hazard Mitigation Committee and Residents of the community do not generally consider earthquake to be a high enough risk to require preparing for one beyond providing information to local residents.

Fluvial Erosion

While fluvial erosion is an important concern in many parts of the state, the hazard is not historically applicable to the Town of Panton. Lacking much elevational change, the two waterways in town, Dead Creek and Otter Creek behave more like estuaries of Lake Champlain with an almost imperceptible current.

Because of a lack of infrastructure in lower lying areas, Panton has basically no history of flooding damages. Town-owned infrastructure at risk for inundation flooding is limited to Panton Road where the road crosses the Dead Creek and West Road, which formerly crossed Dead Creek south of Panton Road. The West Road bridge was abandoned and replaced by an impoundment dam when the wildlife refuge was developed. Only one member of the town’s mitigation committee remembers a time when Panton Road was under water due to back up from Lake Champlain. No damages were recorded other than a road detour around the flooded section of town highway at that time. Both the Statewide Highway Flood Vulnerability and Risk Map (Figure 3) and the Vermont Transportation Resilience Planning Tool (Figure 4) identify the section of Panton Road where it crosses Dead Creek as important, primarily due to its criticality in connecting the road network.

Lake Shore Flooding

When the Lake Champlain water level exceeds 101 feet in elevation above sea level some minor shoreline flooding may occur. However, due to the fact that almost all of the structures and residences are well above the highest recorded flood level of 103’, little if any damage affects private property. The only location where minor flooding occurs is the public use/access area at the Arnold Bay boat launch and beach area. Flooding there can come up to the base of the access road and cover the entire beach area. Given that there is little above ground infrastructure in that area the flooding does not typically create any problems other than minor erosion of the road edge and beach area. The clay banks of Panton's lakeshore are subject to erosion, and there have been ongoing losses of lakeshore lands coupled with stabilization efforts by private property owners to reduce or limit this problem. The town has committed to monitoring and responding to lakeshore flooding and slope erosion events and issues.

Figure 3. Panton Road Segment Vulnerability from the Vermont Statewide Highway Flood Vulnerability and Risk Map

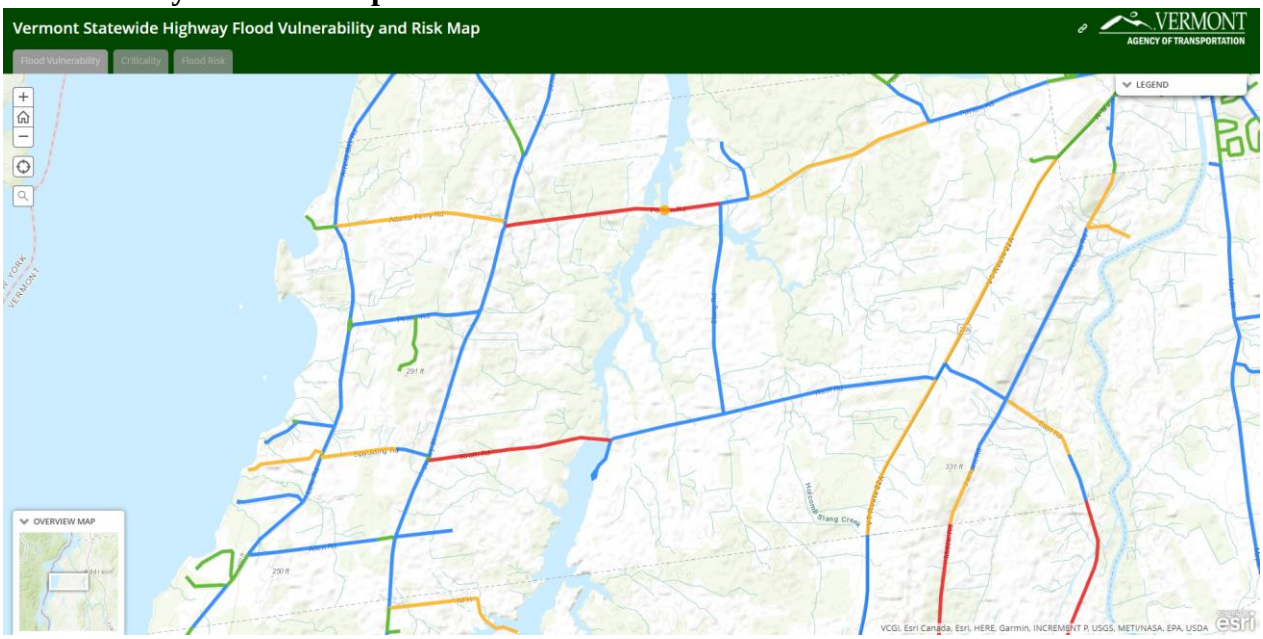
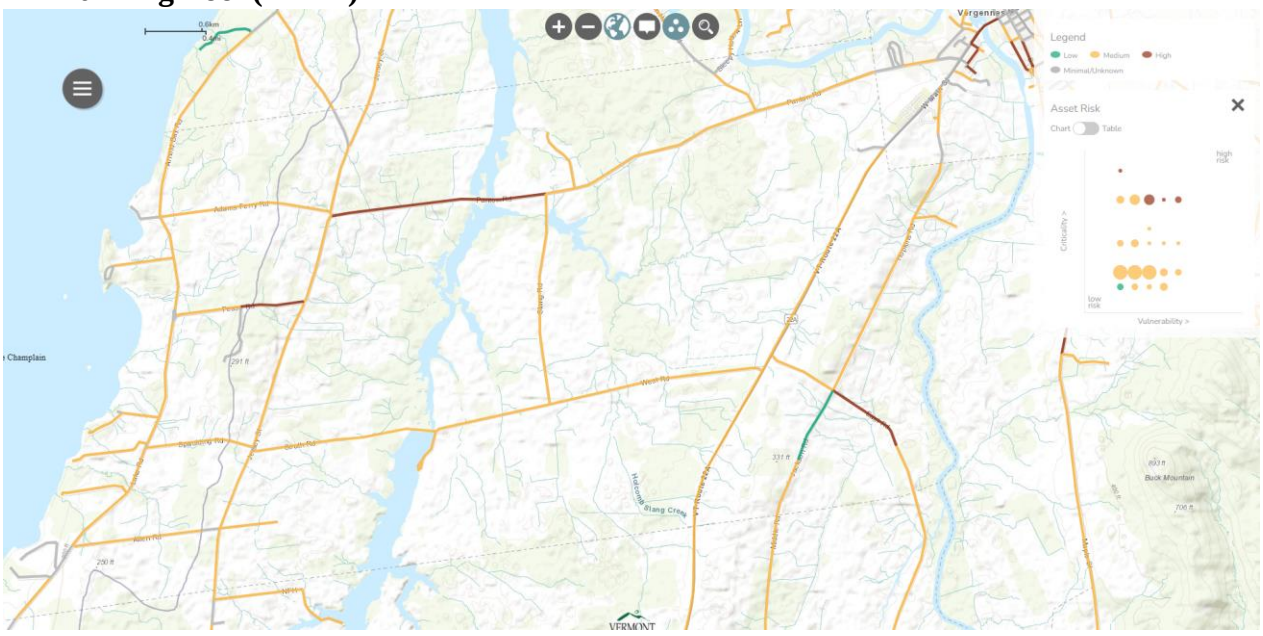


Figure 4. Panton Infrastructure Asset Risk from the Vermont Transportation Resilience Planning Tool (TRPT)



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 has identified that its goals for hazard mitigation are to reduce vulnerabilities to the hazards identified in section 4.3 and mitigate their potential harmful effects. In doing so, it also recognizes that political will and lack of funding stand in the way of many mitigation projects. The town particularly supports local residents' efforts to mitigate their personal risks. The Town also supports projects that lead to a positive benefit vs. cost evaluation and which the voters can afford.

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 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 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 Storm	Ensure that essential services can function during and after winter storm events and minimize potential resulting power outages to reduce vulnerability of residents.

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. They take care of roads, make appointments to other boards and commissions, and authorize expenditures of voted budgets. The selectboard may enact ordinances and rules in many areas including traffic regulation, regulating nuisances, managing solid waste, dogs and recreation, and establishing bike paths.

Planning Commission: The Planning Commission is responsible for long range planning in a town particularly as it relates to future land uses and resilience. They prepare a municipal plan and zoning bylaws which are adopted by the Selectboard. Planning Commission members are appointed by the Selectboard.

Zoning Administrator: The Zoning Administrator (ZA) is appointed by the town's Selectboard with consideration given to the recommendation of the planning commission. Their responsibilities include administration and enforcement of a town's zoning bylaws, The ZA and usually also serve as the administrator of town floodplain regulations.

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

Fire Warden: The Town Forest Fire Warden has the responsibility for suppression of wildland fires, regulating open burning in the town by issuing burn permits, and wildfire education/prevention. The Town Fire Warden is appointed by the state Commissioner of Forests, Parks and Recreation with approval by the town's Selectboard.

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. They take direction from the state Department of Health in investigation and enforcement of public health issues.

Town Service Officer: The Town Service Officer's responsibilities are to coordinate aid for residents needing assistance during hours when State offices are closed. In many towns, this office has become redundant as State agencies have developed 24/7 emergency assistance programs.

Emergency Manager or Coordinator: By default, a towns 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 within the region. The TAC rates high crash locations highly in prioritizing projects to mitigate the risks associated with these locations by changing alignments, adding signage and reducing speeds.

The community is also a participant 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.

In its efforts to make a safer highway system throughout town, it is also attempting to mitigate the likelihood of a significant hazardous materials spill. Appropriate signage and adequate warning will not only reduce the number of highway accidents but will also serve to reduce the probability of future hazmat spills.

A major push toward Electric Heat Pumps as envisioned by the town and GMP should also reduce the quantity of petroleum traveling on town highways and delivered to homes, thereby also reducing the risk of 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.

Most of the larger privately-owned structures in vulnerable locations have similarly installed lightning rod systems to protect them from lightning strike with the encouragement from insurance companies and extension agents. The Town has no adopted building standards which would require this action but feels the risk to private residences should be borne by each resident on their own.

Making educational materials available in the town office will assist residents in their ability to mitigate the effects of lightning in their homes.

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

Municipal zoning requires over-the-top ties and frame ties at each of the four corners of mobile home, with 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 is in the process of developing a Continuity of Operations Plan.

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 and have annual hazardous materials trainings, as well as battery and ESS-specific trainings offered by the Vermont Fire Academy and Regional Fire School.

Severe Winter Storm

Many private residences have back-up power sources and essential Town facilities like the Town Office and Town Garage either have been retrofitted in recent years or are scheduled to be fitted with back-up power. Construction of a 5MW solar facility by Green Mountain Power 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.

As population growth and housing expands along remote road corridors, increasing reliance on dependable power by the new homeowners requires changes in line maintenance. Green Mountain Power (GMP), the utility servicing the Town of Panton, has an ongoing program of line clearing and relocation to ensure outages are kept to a minimum. In addition, planned improvements to the micro-grid in Panton addressed in the town's MOU have resulted in a redundant system far more resistant to failure than it was previously.

The Town of Panton supports continued development of a robust and redundant local electric generation and transmission system for its residents. This support is limited to that which can prove that the benefit to local residents outweighs the societal costs associated with industrial generation and transmission degradation of the local landscape.

The ability to expand on the town's activities is generally related to the availability of funds. Fortunately for Panton, their MOU with GMP will allow for better resilience within the town at comparatively little cost to the town.

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 constantly evaluated for benefit to the community, estimated project cost and political will to implement and will be implemented as those factors indicate. Several mitigation projects have been completed in the past five years, and additional work is underway.

The actions identified in Section 5.4 under each hazard have passed a preliminary evaluation utilizing those general concepts by the hazard mitigation committee, and are listed in their order of priority. Before undertaking these projects, they will additionally be prioritized based on their feasibility and a benefit vs. cost review. A minimum C/B result of 1.0 will be required prior to any request for federal mitigation funds. All projects in section 5.4 will be reviewed for progress following any local disaster declaration and will be considered annually as part of overall town budgeting.

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 revised from the previous plan due to changes in community priorities. The Hazards Committee identified a comprehensive range of specific mitigation actions from the previous Hazard Mitigation Plan, the State Hazard Mitigation Plan, and the goals and actions of neighboring municipalities, and analyzed each. Projects were considered to reduce the effects of each priority hazard, with emphasis on human life and safety as well as consideration of the new and existing buildings and infrastructure.

The final list includes only those projects which could be considered reasonable and feasible based on cost and political willingness. The town will maximize 406 mitigation opportunities whenever possible when making repairs to Public Assistance eligible damages during a declared disaster.

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 timeframe for project completion. 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)

5.41. Hazardous Materials Transportation Accident

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

Estimated cost to Town: $1,000 (Traffic Engineering Study & signage cost)
Source of funds: Town highway budget
Responsibility: Road Commissioner and Selectboard
Timeframe: Q1 2024– Q4 2026
Benefits: Reduced 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 hazard mitigation infrastructure funding
Source of funds: Hazard Mitigation Funding
Responsibility: Selectboard and Road Commissioner
Timeframe: Q1 2026– Q4 2029
Benefits: Increase lifespan and resilience of road infrastructure connecting Village and Lakeshore area to nearest City center and emergency response agencies.

Maintain County Sheriff's patrols for visibility and additional patrols

Estimated cost to Town: $7,000 per year
Source of funds: Town General Fund
Responsibility: Selectboard
Timeframe: Q1 2024– Q4 2026
Benefits: Reduced speeding hazard and probability of hazardous materials-involved crashes.

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 & Green Mountain Power
Timeframe: Ongoing
Benefits: Increased energy efficiency of current housing stock and reduced transport of Hazardous Fuels over town highways.

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

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Emergency Management Director and Coordinator
Timeframe: Q1 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: ½ Town Highway Funds, ½ Town General Fund
Responsibility: Selectboard
Timeframe: Q1 2024 - Ongoing
Benefits: Reduced fire hazard to town-owned buildings

Support education in this area by providing educational materials in the town office available for distribution with zoning permit applications.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Zoning Administrator and Town Office staff
Timeframe: Q1 2024 start- ongoing
Benefits: Reduced property damages to residents

5.4.3 Invasive Species

Provide educational materials to town residents to discourage the spread of aquatic and terrestrial invasive species, including the movement of Firewood to slow the spread of Emerald Ash Borer
Estimated cost: None to Town
Source of funds: N/A
Responsibility: Town Office staff
Timeframe: Q1 2024 start- ongoing
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.
Estimated cost: $3000
Source of funds: Town Budget
Responsibility: Road Foreman and Highway Crew
Timeframe: Q1 2024- Q4 2029
Benefits: Reduced risk to residents, vehicles, and electricity outages.

Encourage landowners to control Wild Parsnip by digging out the individual plants and dispose 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: Town Office staff
Timeframe: Q1 2024- Q4 2029
Benefits: Reduce existing Wild Parsnip infestations and limit further spread.

5.4.4 Tornado or High Wind

Encourage Green Mountain Power to underground powerline installation
Estimated cost: None to Town
Source of funds: N/A
Responsibility: Select Board, Planning Commission, and GMP
Timeframe: Q1 2024- Q4 2029
Benefits: Reduce power outages due to wind, snow, and ice storms.

Support removing dead and dying trees within the town right-of-way that could fall during a high wind event.
Estimated cost: $3000
Source of funds: Town Budget
Responsibility: Road Foreman and Highway Crew
Timeframe: Q1 2024- Q4 2029
Benefits: Reduced risk to residents, vehicles, and electricity outages

Require installation of "hurricane clips" on any and all new mobile home installations.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Zoning Administrator
Timeframe: Q1 2024- Q4 2029
Benefits: Reduced risk to residents and homes.

5.4.5 Severe Heat

Adopt and update Hot Weather Emergency Response Plan as an annex to the annual LEMP.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Emergency Management Director and Coordinator, Select Board
Timeframe: Q1 2024- Ongoing Annually
Benefits: Provide clear thresholds and procedures for hot weather mitigation actions.

Maintain facilities and supplies at Town Hall so that it can be used as a local cooling shelter 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 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: Q1 2024 – Q2 2025
Benefits: Increase accessibility of outdoor cooling site.

Set up processes to check on vulnerable populations during and following severe heat events.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Emergency Management Director and Coordinator
Timeframe: Q1 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 & protective supplies.

Estimated cost: None to Town
Source of funds: N/A
Responsibility: Emergency Management Director and Coordinator, Town Office Staff
Timeframe: Q1 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: Emergency Management Director and Coordinator, Select Board, Town Office Staff, Road Crew

Timeframe: Q1 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 for fire coverage and support regular response training between GMP, Vergennes Fire Dept and local response agencies to understand Panton Energy Storage System facility and potential response procedures.

Estimated cost: $40,000 per year

Source of funds: Town General Fund

Responsibility: Select Board

Timeframe: Q1 2024- Ongoing

Benefits: Enhance response to potential fire and reduce risk to first responders.

Maintain awareness of VT Alert in order to notify nearby residents in the event of an incident.

Estimated cost: None to Town

Source of funds: N/A

Responsibility: Emergency Management Director and Coordinator

Timeframe: Q1 2024- Ongoing

Benefits: Ability to notify residents and drivers in the event of an incident, provide evacuation information.

5.4.8 Severe Winter Storm

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

Estimated cost: $3,000 annual cost

Source of funds: Town highway budget

Responsibility: Road Commissioner and Selectboard

Timeframe: Q1 2024- Ongoing

Benefits: Reduce impacts due to ice on roads and downed power lines,

Work with Green Mountain Power to expand the “Microgrid” via back up batteries and new distribution line available from their 5MW solar array and Energy Storage System.

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 and provide back-up capability at town hall

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.

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: Emergency Management Director and Coordinator, 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: Emergency Management Director and Coordinator
Timeframe: Q1 2024- Ongoing as needed
Benefits: Reduce vulnerability of local populations and provide community support system.

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
	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 Green Mountain Power 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 dynamic and should not be fixed. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The plan will be integrated into other plans and updated at a minimum every five years.

6.1 Hazard Mitigation Plan Integration

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)

The municipality will integrate the goals and actions of this hazard mitigation plan into all other municipal planning mechanisms, including the annual Local Emergency Management Plan, annual municipal budget, and Panton Municipal Plan (re-adoption due in 2027). The Emergency Management Director and Emergency Management Coordinator 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 to include government officials and interested public.
2. The Committee will discuss the process to determine if any modifications or additions are needed due to changing conditions since the last update occurred. Data needs will be reviewed, 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 still exists throughout.
4. A draft update will be prepared based on these evaluation criteria:
    - Changes in community and government processes, which are hazard-related and have occurred since the last review.
    - Progress in implementation of plan initiatives and projects.
    - Effectiveness of previously implemented initiatives and projects.
    - Evaluation of unanticipated challenges or opportunities that may have occurred 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 that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy. The plan will be reviewed and updated in its entirety at least every five years as described in Section 6.2 above, the Town will monitor and evaluate its hazard mitigation goals, strategies and actions/projects annually as the town budget is created. A town budget is created by the Selectboard of a town in publicly noticed meetings utilizing budget requests from town committees and the citizenry. This will ensure that progress will be reviewed and actions/projects either added or removed from the towns work plan based on changing local needs and priorities. In creation of the municipal plan by the planning commission, concepts, goals and strategies from this plan will be used to inform the development of that plan and will be incorporated into that plan when appropriate. The progress/status of the mitigation actions identified within the mitigation strategy will be tracked by the Selectboard and Emergency Management Coordinator, who will be responsible for this process and bring mitigation actions to other planning processes. The plan will be evaluated for effectiveness annually and post-disasters (see section 6.5).

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

6.4 Public Participation

This Hazard Mitigation Plan solicited and received public input, especially in developing the hazard risk and vulnerability assessment. The municipality will continue to encourage future public participation in mitigation actions after the plan has been approved. Notice of the plan will be made and a copy of the plan along with contact information will be made available on the town website and at the Town Office. While the public are encouraged to read and comment on the plan, the committee understands that the length of the plan following all FEMA requirements is unwieldy and time-consuming for review, and has therefore provided a concise executive summary to provide the main Vulnerabilities, Goals and Mitigation actions The Emergency Management Director and Emergency Management Coordinator will provide a status report on mitigation action progress at the annual Town Meeting and provide information on potential weather-hazards via local networks including Front Porch Forum. Public comments and suggestions will be recorded and incorporated into the upcoming hazard mitigation plan.

6.5 Post-Disaster Review Procedures

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

1. Within six (6) months of a declared emergency event, the Town will initiate a post disaster review and assessment of actions.
2. This post disaster review and assessment will document the facts of the event and assess whether the existing Hazard Mitigation Plan effectively addressed the hazard.
3. A report of the review and assessment will be created by a Review/Update Committee.
4. The committee will make a determination whether the plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the report is distributed.
5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on its recommendations and forwards to the Selectboard for their input.
6. Following completion of a public input process, further amendments may be made and a final plan delivered to the Selectboard for adoption.
7. The Selectboard adopts 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.

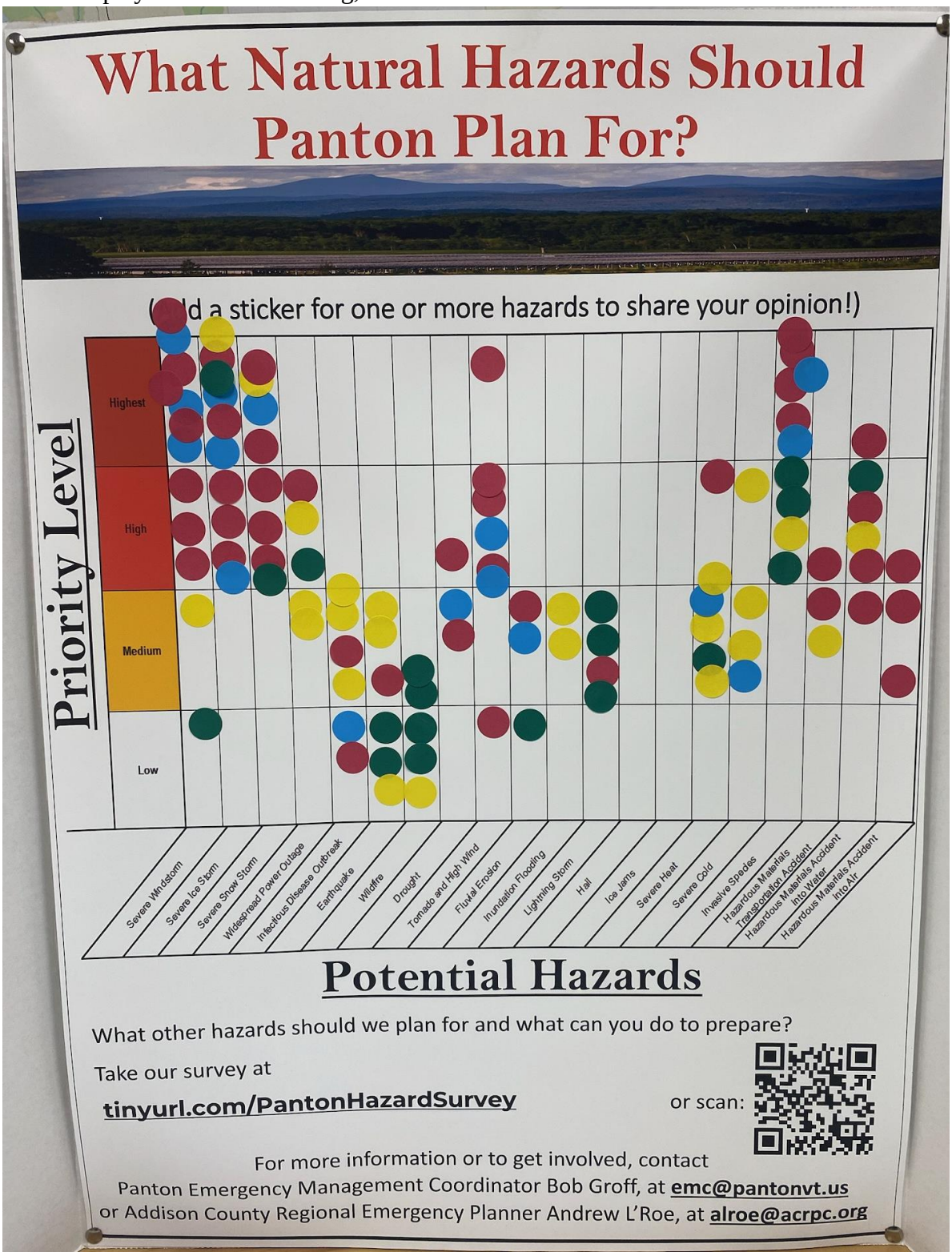
IN WITNESS WHEREOF, the undersigned have affixed their signatures for the Town of Panton, this ____ day of _____ 202__.

_____	_____	_____
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

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/Select Board Chair*	*EMC*
Primary contact info		
Secondary 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 messages 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/Select Board 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 to provide assistance as needed.

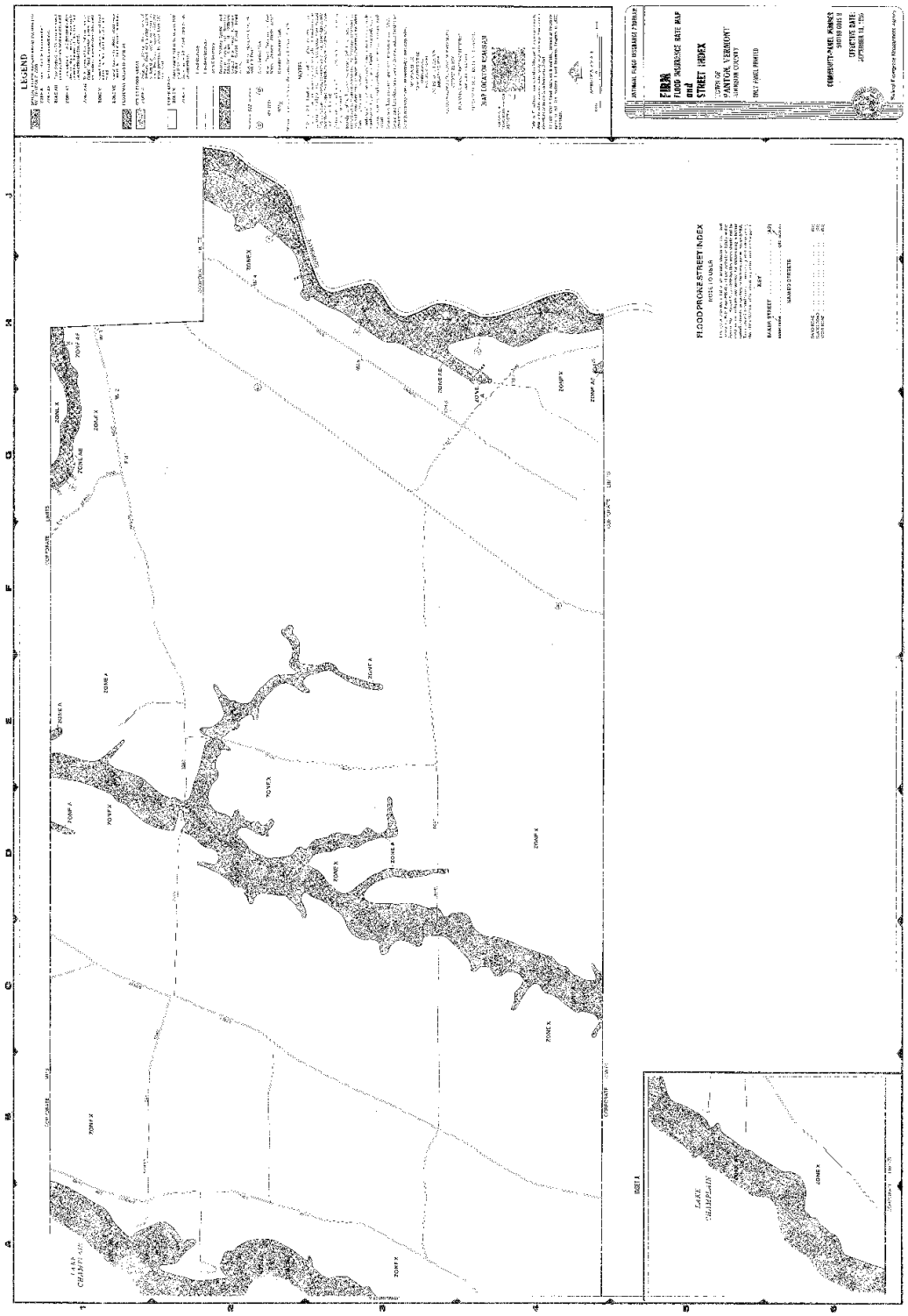
Activity modification/cancellation plans

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
Number 5001690005B, effective 9/18/1986



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