

Community Resilience Building Risk Matrix



NORTHFIELD, MA

www.CommunityResilienceBuilding.org

ALL HAZARDS: severe winter storms, flooding, tornados, dam failure, hurricanes/tropical storms, thunderstorms/microbursts, wildfire, earthquake, landslides, drought, extreme temperatures, invasive species

Top Priority Hazards

H-M-L priority for action over the **S**hort or **L**ong term (and **U**ngoing)

V = Vulnerability **S** = Strength

	Precipitation Extremes: Rain & Drought	Severe Storms & Strong Wind	Manmade Hazards & Dam Failure	Flooding	Priority	Time
					H - M - L	Short Long Ongoing

Features | **Location** | **Ownership** | **V or S**

Infrastructural						
Town Hall	Town Center	Town	S/V	In addition to Town offices and standard operations, Northfield Police, EOC and Senior Center are located at Town Hall. Police and EOC serve Northfield and neighboring communities. Services including emergency operations, radio communication, warming/cooling, prepared meals, charging stations, and emergency drinking water access all rely on electricity.	H	S
	Town Center	Town	S/V	The Building is equipped with a pellet furnace, mini-splits, and oil furnace for redundant heat supply, but electricity still needed need sufficient backup power. Backup generator can only power the Senior Center. Seek funding to upgrade the generator to power the entire building.	H	S
	Town Center	Town	S/V	Stormwater from frequent heavy rain events regularly floods the parking lot at Town Hall. The Town is working with an engineer to design and implement stormwater BMPs retrofits to address flooding.	M	S
Power Outages	Town-wide & priority areas	Utilities, Town	V	Repetitive and/or long term power outages are a risk to the community. Upgrade backup power at Town Hall to serve the entire building and ensure that the Town's shelters and critical facilities have backup generators.	H	S
	Town center & main roads	Utilities, Town	V	Look for opportunities and funding to underground existing and new electrical utilities, especially along main roads in town.	L	L
	Households	Private	V	Many households do not have backup power. Provide guidance on residential backup power and explore grant options.	M	
	Town buildings & facilities	Town	V	Renewable sources of backup power at municipal buildings and critical facilities are needed to improve the Town's energy resilience. Seek funding to assess potential for micro grid with solar PV power.	H	L
Public Buildings	Town buildings & facilities, Dickinson Memorial Library	Town	S/V	The Town Energy Committee has been working to upgrade building envelopes, ventilation, and energy systems at public buildings. Seek funding for engineering analysis, assessment, and designs for energy, ventilation, and backup power systems for town buildings, including options for back-up battery energy storage.	H	L
Wastewater Treatment Facility	Meadow St.	Utilities, Town	V	Aging sewage pipes and conditions at the Wastewater Treatment Plant are causing repeated failures to meet EPA minimum Inflow and Infiltration requirements. Seek funding to implement recommended infrastructure upgrades and repairs in I/I engineering report.	H	L
	Meadow St.	Utilities, Town	V	The WWTP on Meadow Street is located along the Connecticut River and is susceptible to inundation by rising flood waters. Ensure that planned upgrades of the WWTP safeguard new and existing buildings and infrastructure associated with the treatment facility from riverine flooding.	H	L
	Meadow St.	Utilities, Town	V	Continue seeking financial assistance for nearly \$8 million in required improvements urgently needed for the plant to meet operating standards and address flood vulnerability.	H	S

Drinking water supplies	Town, Grandin Reservoir	East Northfield Water Co., Northfield Water District	V	Both water districts are coping with on-going chronic breakdowns due to aging infrastructure and occasionally have difficulty meeting water demand. The Town lacks jurisdiction to implement resiliency upgrades. Seek funding to assess both water districts for solutions to help ensure that each system can meet day-to-day needs and be resilient to drought, flooding and wildfire. Seek funding for engineering assessments, hydrological studies, and technical legal support for addressing water quality issues, for understanding needed infrastructure upgrades at each water district, and for understanding the implications of establishing a second water district. Seek funding to implement needed improvements.	H	L
			V	Private wells serving most homes in Northfield can run dry. Conduct education and outreach to residents about water conservation and rainwater harvesting techniques.	H	S
	Priority areas	Town	V	Seek funding and technical assistance to update and digitize the Water Supply Protection District map and incorporate onto official zoning map. Ensure that the Water Supply Protection district regulations are adequately protective, provide descriptions of the different zones, and indicate the requirements in each zones and which zones are located within Water Supply Protection district boundaries. Digitize the 2017 Village Center, Planned Development, Recreational Tourism 1, and Recreational Tourism 2 planning districts and incorporate onto official zoning map to make these maps more useful to the Town.	L	S
Hazardous facilities and/or transportation	Two RRs, Route 10, 63, 142	Federal, State, Town	V/S	Updated vulnerability assessment and planning for hazardous material or chemical spills in fixed facilities and/or transportation routes is needed. Training is done to keep responders ready.	M	L
Dam Failure	Moore, Vernon, Grandin Reservoir, Nelson Mills Dams, Northfield Mt. Pumped Storage, VT and NH dams		V	Inspections and emergency notification for high hazard dams in town: Nelson Mills Pond Dam, Grandin Reservoir Dam, Northfield Mountain. A breach at Northfield Mt has potential to impact floodplain and residences near Four Mile Brook and the CT River within 50 minutes. Request and review inspection reports and inundation mapping where available. Seek technical assistance to map inundation areas of dams in town and upstream that would impact Northfield. Update evacuation planning for flooding.	M/L	L
Vermont Yankee Nuclear Power Plant	Vernon, VT	Private	V	Updated vulnerability assessment, notification system, and response plan for a hazardous event or emergency situation at Vermont Yankee Nuclear Power Plant waste storage site is needed.	L	L
Communications infrastructure	Town-wide	Utilities, Town	V	Existing communication infrastructure issues and vulnerabilities could be exacerbated by hazard impacts. Town bylaws may need updating to prevent wind-related damage, protect nearby roads and utilities, and ensure regular inspection and maintenance.	M	L
	Priority areas	Utilities, Town	V	Phone and internet lines and related communications infrastructure is vulnerable to high winds and downed trees. Many locations in town have weak cellular connectivity or no service at all. Develop back up and redundant communication options for residents and for town operations during hazards.	H	L
Municipal buildings, facilities, homes	Town-wide	Private, Town	V	Utilize CDBG or other funding to make homes Town buildings more resilient to multiple hazards.	L	L
Public funding for housing safety improvements	Town-wide & priority areas	Private	V	Use CDBG or other funding to assist homeowners in storm proofing and rehabilitation of existing homes.	L	L
Back up water supply	Town-wide & priority areas	Private, Town	V	Identify back up water supply sources and agreements with surrounding towns to supply water in the event that existing sources or distribution systems are affected by a hazard.	M	L
	TBD	Town	V	Include rainwater harvest infrastructure and solar array in the development of designs for the new large emergency services building.	M	S

Complete Streets Projects #7 and #8	Warwick Road, Maple Street	Town	S/V	Seek funding for engineering plans to incorporate green infrastructure stormwater Best Management Practices (BMPs) to address stormwater runoff on existing road surfaces and on proposed new sidewalks in the Complete Streets Prioritization Plan for Warwick Road (Complete Streets Project #8) and Maple Street (Complete Streets Project #7) to ensure that pedestrians, cyclists, vehicles, and the Town's transportation infrastructure are protected from flooding.	L	L
Culverts and bridges	Gulf Road, Four Mile Brook Mile, Mount Hermon Station Road, Old Vernon Road	Town	V	Culverts and bridges throughout town may be undersized/under capacity. Road and culvert washouts could cause closures on many of the Town's evacuation routes, isolating residents and limiting access and response time for emergency responders. Seek funding for needed bridge and culvert repairs, replacements, as well as necessary planning and prioritization of this work.	H	L
Societal						
Northfield Senior Center	Town Hall	Town	S	Full time senior center director and a part time employee dedicated to outreach and care for elder adults on an on-going basis and during hazard events.	H	O
	Town Hall	Town	V	Improve coordination between TRIAD through Sherriff's Dept. and the Senior Center to conduct outreach to elder adults during and after emergency events. Ensure that emergency information is communicated to elder adults via phones rather than computers.	H	S
Food Pantry and Council on Aging	Town Hall, Library	Town	S	The food pantry and food distribution program has been excellent at supplying food to residents during COVID through the Senior Center and Library as well as making food and dispersing meals from Town Hall. COA is supporting vaccine sign-ups, transportation needs, and on-going outreach to elder adults.	H	O
Emergency shelters in town	Northfield Elementary, PV Regional School	Town	S	Both shelters have backup utilities, kitchens, and comply with earthquake standards of building code. PVRS has showers.	H	O
	Northfield Elementary, PV Regional School	Town	V	Update the procedure for opening, staffing, and equipping the emergency shelters on both sides of the CT River. Reassess occupancy capacity, overnight sheltering potential, accessibility via evacuation routes, susceptibility to key hazards, food and emergency supplies. Explore sharing costs with neighboring communities. Establish arrangements with local or neighboring vendors for supplying shelters with potable water, food and first aid supplies.	H	S
The Centennial House	The Centennial House	Private	S	Centennial House offers shelter for those who need it during hazards	L	S
Thomas Aquinas College	Thomas Aquinas College	Private	S	The college is planning to install 3 new generators for backup power.	L	S
The Moody Center	Moody Center	Private	S	The Moody Center has dining facilities, commercial kitchens, dormitories for >100 people if there were an emergency. The Town was allowed to quarantine police officers at the Moody Center who were potentially exposed to COVID-19. Hibbert Hall is available for entertainment, community connection, and enrichment. The backup generator needs an upgrade. Pursue an MOU with the Town to formalize and streamline emergency support services and/or special community events at the Moody Center.	H	S

Significant historic landscapes and buildings	Pine Street, Moody Center	Private, Town	S/V	Northfield Historical Society maintains artifacts from the Town. The building made be vulnerable to fire and need upgrades. Historic assets are difficult or impossible to replace if destroyed by a natural disaster. The Moody Center is planning to collaborate on historic preservation and building improvements which will support sharing of information relevant to East Northfield history, including the Moody legacy.	L	O
Local volunteer capabilities and business resources	East Northfield, town-wide	Private	S	Strong relationships between the town, businesses, and residents. Individuals, namely Steve Wiggin and others committed to volunteering their leadership and technical skills to clean up after disasters, including collaborating with Fire Dept. to maintain recreational and emergency access at the boat ramp. The Moody Center has a civil engineer on staff to help the town. Firstlight may be an available resource. Formalize and organize the Town's local contact list for emergency support and mutual aid resources.	L	O
Public Health	Town-wide	FRCOG, MRC, Town	S	Northfield is a member of Cooperative Public Health Service Health District which has been helpful for responding to the COVID-19 pandemic.	H	O
	Town-wide	Private	V	Improve the reach and utilization of safety education on insect borne diseases such as Lyme disease and Eastern Equine Encephalitis (EEE).	M	O
Household disaster preparedness	Town-wide	Private, Town	V	Improve the reach and utilization of emergency information, including how to prepare home survival kits, following proper evacuation procedures, and how to prepare homes and structures for flooding and high winds.	M	O
Emergency response resources	Town-wide	Town	V	Rehearse Emergency Action Plans, roles and responsibilities for key players.	M	S
	MRC, Volunteers,	Town	S	Franklin County Medical Reserve Corps is organized locally to improve the health and safety of their communities. During the pandemic, MRC units have supported contact tracing, testing, telehealth services, logistics and emergency operation center services. Encourage interested residents to join the Franklin County MRC.	L	O
	EMD, Police and Fire, Volunteers	Town	S	The Police and EOC serve Northfield and neighboring communities. Northfield EMS is paramedic level with 2 fully staffed 4WD ambulances.	H	O
	East Northfield, West Northfield, Old Vernon Road, Hermon Station Road	Town	V	Reaching residents on either side of the river can be jeopardized by a hazard impact to the Route 10 bridge over the CT River. Work with Mass Highway/DOT to develop mutual aid agreements that would involve local DPWs sharing staff and/or vehicles and equipment with neighboring communities during emergency situations. Develop plans for pre-emptively staging equipment on either side of the river in preparation for a hazard event ahead of time. Coordinate with Erving and Warwick and Hinsdale, NH and Winchester, VT to help out during emergencies.	L	S
	Mount Hermon Station, Gulf Road, South Mountain, Rte 63, Old Vernon Road	Town	V/S	Closures of primary roads or bridges due to hazards could isolate residents in some parts of town, delay emergency response, and disrupt evacuation routes and procedures. Most roads have secondary access. Ensure that the most vulnerable parts of town have secondary options for emergency access or evacuation.		
	EMD, Police and Fire, Volunteers	Town	V	Reaching residents in remote locations over snowpack is challenging if roads are impassible. Tristate Fire Mutual Aid system for shared services with the off-road emergency utility task vehicle options with the Town of Orange.	L	L
Hazmat emergency response, notification, and evacuation	EMD, Police and Fire, Volunteers, REPC	Town	S/V	Northfield Fire Dept. has emergency evacuation, response procedures, and trainings for responders in the event of a chemical spill in a fixed structure or in a transportation setting such as Route 10, Route 63, or the railroads. Work with REPC to assess vulnerability to transportation and fixed facility hazmat accidents and to prioritize manmade hazard action items.	M	L

Emergency Notification	Town-wide	Town	S	The Town uses CODE RED to send emergency notification to residents. Subsets in CODE RED allows the EMD to select recipients by age group, which could be helpful for outreach to vulnerable populations.	H	O
	Town-wide	Town	V	Conduct outreach town-wide through calling and mass-mailings to encourage enrollment in the Town's CODE RED notification service and provide technical support and suitable modalities for elder adults to access emergency communications. Utilize the Senior Center for outreach and assistance.	H	S
Fire safety	Town-wide	Private, Town	V	Increase education on general fire safety education by posting regular information on the town website and newsletter. Increase Fire Dept. funding, staff and resources, including an off-road emergency utility task vehicle. Utilize DCR resources for signage on trails to promote fire safety. Encourage forest stewardship which reduces fire hazards, and coordinate emergency access on privately owned forest lands with the Fire Dept.	M	O
			S/V	Weather conditions including drought can affect water resources for fire fighting and/or contribute to wildfire risk conditions. Fire Dept. maintains year-round dry hydrants and fire ponds for fire protection and is continually seeking additional water sources. Seek funding to create additional water sources for fire fighting.	M	O
	Town-wide	DCR	S	DCR is offering training for wildfire responders to locals as well as state firefighters.	L	O
Environmental						
Connecticut River	Priority areas	Private, Town	V	Significant pool fluctuations, unstable banks, and slumping in the Turners Falls Power Pool has led to serious erosion and loss of farmland along the river. Continue to advocate for improved stewardship through the CT River Streambank Erosion Committee. Monitor seasonally for ice buildup and ice jams.	H	O
Cold water streams	Town-wide	Private, Town	S/V	Northfield contains many Coldwater fish resources, which provide critical habitat for Coldwater fish species. Conduct River Corridor mapping and adopt River Corridor Protection zoning to protect riverine areas.	L	L
	Priority areas	Private, Town	V	Work with Trout Unlimited, land trusts, private landowners, and DCR on assessing streams for conservation and management strategies to slow floodwaters and reduce debris, habitat destruction, and impacts to downstream infrastructure.	L	O
Abundant wetlands and open water	Town-wide	Private, Town	S	Northfield's water resources provide valuable ecosystem services and habitat, support recreation, quality of life, and sense of place.	M	O
Invasive species	Priority areas	Private, Town	V	Invasive species are becoming widespread in certain locations and displacing native flora and fauna. Work with the Open Space Committee and local landowners on mitigation strategies for priority areas.	M	O
Floodplains and open space	Designated areas	Private, Town	V	Support local and regional watershed-wide open space protection efforts in floodplains to help mitigate flood hazards. Update Vulnerability Assessment for properties within the 100yr floodplain. Develop and adopt a Wetlands Bylaw.	M	L
Beaver dams posing significant hazard	Old Vernon Road, Hermon Station Road, Rte 142, town center	Private, Town	V	Beavers are active at several locations across town clogging drainage systems with debris and causing local flooding and damage to roads and property. 3 miles of Old Vernon Road, Mount Hermon Station Road, and Rte. 142 could be impacted by a cascading dam failure in Sawyer Pond where beavers have constructed several large impoundments. Other locations include between Pine Street and Holton Street near town center, East Street @ School Street, and the access road off of Route 10 near Old Bernardston Rd. Assess the potential for controlled breaching and flow control devices reduce risk of dam failure and alleviate the need for continued trapping.	L	S

Town trees	Town center, Four Mile Brook Road, Gulf Road, most town roads	Town	S/V	Continue to inspect and identify priority areas for tree maintenance near utility lines on a regular basis and coordinate tree work with Eversource to remove hazardous trees. Continue to implement the 2018 Town of Northfield Tree Planting and Maintenance Plan for new tree locations and species downtown and the Summary Action Plan to support implementation of goals.	M	O
Farmland	along CT River		S/V	Local farms and several CSA's provide food security, enrich the local food system and economy, and provide scenic beauty and sense of place. Farms may be susceptible to natural hazards including flooding, erosion, invasive species, and may become vulnerable to development if not permanently protected.	L	O
Upland brooks	Four Mile Brook Road, Gulf Road, Orange Road, Warwick Road, Caldwell Road	Private	V	Chronic flooding events on several feeder brooks have been growing more serious and having more extensive impacts in recent years, making roads and culverts in these areas susceptible to erosion hazards and washouts during heavy rains events and causing sedimentation of streams. Riverine flooding, erosion, sedimentation, and water quality issues, including nonpoint source pollution are affecting Northfield's water resources. Seek funding for engineering plans to implement Stormwater Best Management Practices (BMPs) and to move problematic roadways away from streams in priority locations.	M	L
Contiguous Forest	Town-wide	Private, Town	S/V	Large protected blocks of forestland support biodiversity and species migration, carbon sequestration and storage, and serve as green infrastructure by slowing, absorbing, and storing flood waters. Steep forested parcels of privately owned land need to remain forested to protect watershed health and infrastructure downslope. Identify parcels of land important to conserve or that are at risk of losing conservation values, utilizing tools such as BioMap2 and Mass Audubon's MAPPR. Work with land trusts and willing landowners on permanently protecting parcels.	M	L
	Town-wide	Private, Town	S/V	Implement a landowner incentive payment program in Northfield for implementing forestry Best Management Practices (BMPs) that promote forest health, carbon sequestration and storage, resiliency to climate change, and local wood products.	M	L
Debris Management Plan and site	Town, Region	Town, Region	V	The Town still needs to establish a debris management site for post-disaster debris.	L	L