# Section 3 – State & Local Capabilities

This section and the corresponding table identify the funding and incentives, tools and data, technical assistance and training, and regulations that influence hazard mitigation in Vermont. Since inundation flooding and fluvial erosion remain the top priority hazards to which Vermont is vulnerable, many State policies and programs aimed at improving mitigation are centered on inundation flooding and fluvial erosion.

# Funding

## Hazard Mitigation Assistance

A long-standing source of funding for hazard mitigation activities is FEMA’s Hazard Mitigation Assistance (HMA), which is administered by Vermont Emergency management (VEM). HMA consists of several distinct programs, including the Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA), and Legislative Pre-Disaster Mitigation (L-PDM). This funding is intended to support proactive risk reduction across Vermont and is primarily utilized to reduce future flood risk.

HMGP funding is tied to federally declared disasters within the State. The amount of funding available for any HMGP round is typically an amount equal to 15% of the federal aid available for that disaster through Public Assistance and, when applicable, Individual Assistance (see below). While the funding amount is tied to specific disasters, communities seeking HMGP funding do not need to have been impacted by that disaster. The best use of this funding is project implementation – to include developed property buyouts, upsizing culverts and bridges, floodplain restoration, dam removal, and floodproofing or elevation. Eligible projects also include planning activities and generators for critical facilities, as well as Advanced Assistance, which can be used for scoping activities and developing project applications.

BRIC and FMA have annual funding cycles (though the exact dates often change). BRIC funding is divided between State allotments ($2 million per state in the most recent cycle, FY22) and a national competition, where individual projects across the country vie for funding. The BRIC program began in fiscal year 2020 and replaced what was previously the annual Pre-Disaster Mitigation (PDM) program. BRIC funding is available for planning and project scoping activities, as well as project implementation.

FMA is similarly a competitive grant program, which is funded through the National Flood Insurance Program (NFIP) and intended to reduce future risk within NFIP-participating communities and properties. Vermont does not regularly apply for funding under FMA.

L-PDM is a Congressionally Directed Spending program, which began in the fiscal year 2022. Members of Congress request prioritization of specific hazard mitigation projects. Communities with projects identified by their Member of Congress can then apply for up to a pre-determined amount of funding. Following project selection and appropriation, a full application is developed with VEM for submission to FEMA.

### Grant Process

While these programs differ in their scope and application process, the HMA programs share the same main features. HMA funding can be used for a range of eligible hazard mitigation activities, including planning, scoping, and implementation. For most implementation activities, a Benefit-Cost Analysis (BCA) is required – except for certain project types where a BCA waiver is available, such as developed property buyouts within the Special Flood Hazard Area (SFHA), with a project cost under $323,000, as well as home elevation projects with a project cost under $205,000. Additionally, a simplified BCA is available for the buyout of developed properties at imminent risk of landslide failure – VEM partners with the State Geologist at the Department of Environmental Conservation (DEC) to make this determination.

Additionally, HMA programs require a non-federal match, typically of 25%, though this match requirement can be lowered for certain communities or funding rounds. The BRIC program, for example, allows communities that meet FEMA’s definition of Economically Disadvantaged Rural Communities (EDRC) (called Small and Impoverished Communities in statute) to apply for a 90% federal share. See more discussion below regarding a state definition of EDRC that more accurately reflects Vermont communities. Additionally, VEM received an $8 million General Fund allocation from the Legislature in 2022 to cover match for property buyout projects as well as other FEMA-funded projects as needed.

Under HMA, VEM serves as the applicant and entities seeking funding, to include cities, towns, villages, as well as other segments of government such as Regional Planning Commissions (RPCs) and Conservation Districts (CDs), serve as sub-applicants. The communities submit sub-applications to VEM, which are then evaluated by the interagency Project Review Committee (see below). VEM then submits the State’s application to FEMA, with all qualifying sub-applications included.

For each sub-application, FEMA determines whether its eligibility, cost-effectiveness, and programmatic requirements have been met. When sub-applicants are awarded an HMA grant, VEM works with the community to administer the grant to meet FEMA’s requirements for reporting, monitoring, and, once the work has been completed, closing out the grant.

VEM has Administration Plans for each round of funding that assist in ensuring that the State manages and administers FEMA funding in accordance with applicable federal statutes and regulations.

### Technical Assistance

VEM provides technical assistance to sub-applicant communities throughout the application development and implementation process. During application development, VEM prepares forms and minimizes the demands on local officials’ capacity. VEM has, when able, also conducted BCAs for sub-applicants, or hired contract support to develop BCAs. Typically required to satisfy FEMA’s cost-effectiveness requirement, BCAs often require technical expertise that is beyond the capacity of local communities.

As it evaluates sub-applications, FEMA will frequently request additional information from the sub-applicant regarding BCAs, environmental and historic preservation review, or other programmatic requirements. VEM coordinates responses to these Requests for Information (RFIs), assisting the local community in answering technical questions and ensuring a timely reply. Even after grants are awarded, technical assistance continues throughout project implementation and the closeout process, which can include requests for cost overruns (available under HMGP as funding allows), as well as the submission of scope of work modifications when needed.

### Project Review Committee

Vermont’s inter-agency Hazard Mitigation Project Review Committee (PRC) is responsible for evaluating HMA sub-applications and determining which ones are submitted to FEMA. Composed of representatives from VEM, ANR, VTrans, ACCD, and the RPCs, the PRC utilizes the diverse perspectives and expertise of its members in the evaluation process.

The PRC typically meets several weeks before a HMA funding round deadline, depending on the round and when applications are received. Generally, each member of the committee scores each sub-application unless the funding round is non-competitive, in which case they may decide not to score each project but review for eligibility and feasibility. The rubric utilized includes numerous criteria to gauge a proposed project’s effectiveness, impact, proactivity, and unique circumstances. For each project, the scores of each committee member are averaged together. Using this average score as a guide, the PRC then makes a final determination on whether to advance a sub-application and submit it to FEMA (scoring sheet included in the appendix).

The PRC uses this same process to evaluate applications for the State’s grant program (see Flood Resilient Communities FRCF) below). Applications under FRCF that are advanced by the PRC are then submitted to Vermont’s Agency of Administration, which confirms eligibility before making an award.

## Public Assistance and Individual Assistance

Though primarily a recovery program aimed at repairing damage to public facilities resulting from a disaster, FEMA’s Public Assistance (PA) is also a potential funding source for hazard mitigation. When a federally declared disaster occurs in Vermont, funding is made available based on the amount of assessed damages. The State and local governments, as well as certain private entities such as utilities, can apply for PA funding to repair public facilities such as buildings and infrastructure.

PA can also fund hazard mitigation in conjunction with recovery work. PA funding can be used to not only repair a public facility to its pre-disaster condition, but to make improvements to those portions of the facility if they directly reduce the risk of future damage.

VEM, which administers the PA program in Vermont, works with applicants to identify opportunities to incorporate hazard mitigation into their recovery efforts under PA. Applicants are encouraged to expressly request hazard mitigation consideration when applying for PA funding.

The State’s use of PA funding for hazard mitigation has had a demonstrable effect. For instance, previous hazard mitigation efforts in the rural town of Starksboro in Addison County under PA resulted in significantly increased the town’s resilience to winter storm events. Following Vermont’s most recent federally declared disaster, a severe storm in late December 2022, the relatively low damages in Starksboro resulting from the storm were largely attributed to previous mitigation measures, and Addison County was not included in the declaration request.

FEMA Individual Assistance (IA) is another disaster recovery program that can potentially fund hazard mitigation. IA provides financial and direct services to uninsured or under-insured households affected by a disaster, including funding for the repair or replacement of owner-occupied homes. Beginning in 2021,[[1]](#footnote-2) IA funding can include additional home repair assistance for hazard mitigation, allowing eligible homeowners to rebuild more durable homes.

IA has not been a significant source of funding for Vermont in recent years. IA is only triggered when a state can document a certain amount of damage to individual homes and driveways. In Vermont this high threshold has been met only following very significant storms. Vermont has not had an IA event since 2011 and Tropical Storm Irene (by comparison, there have been 15 additional PA events since then). Add in a quick note re: July 2023 flooding!

### Emergency Relief and Assistance Fund

The Emergency Relief and Assistance Fund (ERAF) is a State fund that contributes to the non-federal match required under the PA program. This lessens the financial burden on local communities, including those seeking to use PA funding for hazard mitigation.

By default, ERAF covers 7.5% of the total costs applied for under PA. This contribution is for local communities that have already taken certain hazard mitigation measures. Communities that participate in the National Flood Insurance Program, have road and bridge standards, a local hazard mitigation plan, and a local emergency management plan receive 12.5% of total PA costs from ERAF, while communities that additionally have river corridor bylaws receive 17.5%. (See National Flood Insurance Program, Local Hazard Mitigation Planning, and Other Local Capabilities sections below). Thus, ERAF not only provides funding, but also incentivizes local communities to adopt hazard mitigation regulations and plans.

[ERAF graphics; see Figures 9-11, 2018 SHMP pp.20-21]

### Stream Alteration General Permit

FEMA recognizes Vermont’s Stream Alteration General Permit (SAGP) as “codes and standards” for purposes of future Public Assistance repairs (Letter to file “Re: Technical Guidance Concerning the Proposed Revisions to the Vermont Stream Alteration Rule and General Permit” from the FEMA Region I Administrator to the Secretary of the Agency of Natural Resources, dated November 9, 2016). For several disasters following Tropical Storm Irene in 2011, VEM, Agency of Natural Resources (ANR) and Agency of Transportation (VTrans) worked with FEMA Region I on a case-by-case basis to have upsized drainage structures deemed fully eligible for PA funding.

Beginning with DR-4330, which occurred in July 2017 and was declared in August 2017, structure replacements that fall under the jurisdiction of the SAGP and are required to meet the standards of the SAGP are presumed to be PA-eligible. Costs associated with upgrades and improvements to damaged or destroyed structures (i.e., culverts) required by the SAGP will be covered by PA. This significant improvement allows Vermont to more quickly, efficiently, and consistently upgrade vulnerable infrastructure during repairs from natural disasters.

## Flood Resilient Communities Fund

[logo, project photos]

The Flood Resilient Communities Fund (FRCF) is a State grant program that was established by the Vermont Legislature in 2021 under Act 74 using appropriations from the federal American Rescue Plan Act (ARPA). FRCF funds efforts to improve landscape and community resilience and reduce the future public safety and water quality impacts of climate-related flood hazards in Vermont, focusing on voluntary buyouts of flood-vulnerable properties.

FRCF was created to fill funding gaps in FEMA eligibility and was a top action identified in the 2018 SHMP. FRCF prioritizes projects that are not eligible under HMA (see above) and aims to leverage other funding sources or fill funding gaps to make projects viable.

Jointly administered by the DEC and VEM, the FRCF grant process shares some similarities to HMA, as well as some key differences. Cities, towns, and villages can apply for FRCF funding, as can other municipal entities and nonprofit organizations. DEC and VEM often work with interested communities to develop effective applications. FRCF’s application requirements are less onerous than those of HMA. Applicants fill out a five-page form (some project types require supplemental forms) and submit along with any prepared project designs. There is currently no local match requirement for FRCF.

As with HMA, FRCF applications are evaluated by the interagency PRC for effectiveness, impact, proactivity, and unique circumstances. Applicants advanced by the PRC are then submitted to the DEC Clean Water staff, to ensure ARPA eligibility, then finally to the Vermont’s Agency of Administration inter-agency committee which reviews all ARPA funding applications before approval.

Since its inception in 2021, FRCF has awarded nearly $11 million for projects in over 30 Vermont communities (as of July 2023). The program has funded creative projects that would likely have struggled getting to award under HMA, and the streamlined application process has enabled hazard mitigation funding to reach communities more quickly and with a reduced administrative burden.

[Graphic: FRCF funding map, visual by-the-numbers]

[Call out box re: specific example projects]

## River Corridor Easement Program

The Rivers Program within DEC promotes the protection of river corridors through its River Corridor Easement Program. The program provides a financial incentive to landowners to allow for passive restoration of channel stability by allowing the natural erosive forces of the river to establish its least erosive form over time. Priority is given to those projects, identified in river corridor plans, which protect or restore the flow, sediment, and nutrient attenuation areas within Vermont river basins.

Under a river corridor easement, the landowner sells their river channel management rights within the meander belt width corridor of sensitive and erosive streams. The landowner agrees to restrictions from intervening with erosion and channel adjustments within the corridor, while agriculture and silviculture are permitted outside of the buffer zone within the river corridor. The width and configuration of river corridors are defined by the Rivers Program to accommodate the natural processes, meander pattern and slope of the stream in its equilibrium condition. This reduces conflict with unstable streams and maximizes the public benefits associated with geomorphically stable streams and floodplains.

## VTrans PROTECT Program

The new Promoting Resilient Operations for Transformative, Efficient, and Cost Saving Transportation (PROTECT) program, established by the federal Infrastructure Investment and Jobs Act, is being administered in Vermont by the Agency of Transportation (VTrans). PROTECT funding will be used to make roads and other transportation infrastructure more resilient to natural hazards. Eligible activities include resilience planning, design, technical capacity building, and transportation resilience improvement projects. The program will provide Vermont with $37 million in formula funds over five years (Fiscal Years 2022-2026). A competitive grant component may create opportunities for State and local governments to access additional funding.

## Emergency Watershed Protection Program

The USDA Natural Resources Conservation Service’s Emergency Watershed Protection Program (EWP) is potentially available to assist property owners facing exigent risk of property loss due to ongoing erosion after a qualifying storm. Applications for EWP must be submitted by a municipality in which the property is located and submitted to the federal Natural Resources Conservation Service (NRCS) within 30 days of the incident which caused the imminent risk of further damage. The program does not cover infrastructure that has already occurred, and work must be pre-approved by NRCS prior to commencement. NRCS often does not receive funding for a specific incident until months later. Occasionally a project meets all the criteria and can be funded, allowing for stabilization of a stream bank to protect structures and/or private roads.

## Vermont Urban and Community Forestry Program

The Vermont Urban & Community Forestry (VT UCF) Program is currently expanding their grants program, with an expected $500,000 being administered in 2024. These funds will be divided among three separate categories of grants, as well as supporting two additional grant programs through other organizations. These include Communities Caring for Canopy, Growing Urban Forests in the Face of Emerald Ash Borer, and Urban & Community Forestry Grants. The additional grant categories are Fruit & Nut Tree Grants through the Vermont Garden Network for the third year and a new Urban Tree Planting Block Grant Program. These funding opportunities can assist municipalities in urban resiliency as the impacts of invasive species and extreme heat negatively impact the health of urban green spaces and increase Urban Heat Island Effect.

## American Rescue Plan Act Funding for Housing Development

The federal American Rescue Plan Act (ARPA) has enabled a significant investment in housing development in Vermont. The State has committed around $159 million to various housing initiatives that will aim to bring over 3,900 new housing units to market by 2026.[[2]](#footnote-3) Much of these funds will be administered by the Vermont Housing and Conservation Board (VHCB) and aid in achieving a range of affordable housing aims. VHCB was created to deconflict the dual goals of creating affordable housing and protecting Vermont's natural and cultural resources. As more residents find that their homes are in expanding flood areas or otherwise at risk of hazards, balancing these goals and ensuring an adequate supply of safely located housing will be even more crucial.

**Fire Management Assistance Grants**

Fire Management Assistance Grant (FMAG) Program grants are available for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands. They are available at 75% cost share. In Vermont the Department of Forests, Parks and Recreation managed FMAG. FMAG does not cover private property damage.

## Dam Resilience Funding

Dam resilience projects and dam safety programs require continual attention and funding due to the risk that is posed by aging dam infrastructure throughout the State. Different funding programs are offered by agencies such as FEMA to successfully fund activities including dam safety training, dam inspections, streamlining submittal and review of EAPs, increased coordination and outreach between the state and federal government as well as with the community.

HMA and FRCF funding (see above) can be used for dam resilience or removal projects. Dam funding applications under HMA and FRCF go through the same process as other hazard mitigation projects under those programs. The Project Review Committee evaluates dam applications based on the project’s effectiveness, impact, proactivity, and unique circumstances, then makes a final determination on whether to advance the application to either FEMA or the Agency of Administration.

Programs such as the National Dam Safety Program State Assistant Grant ensure the safety and upkeep of critical pieces of infrastructure that both provide a host of benefits (hydropower, flood control, water supply, etc.) while also posing a risk to downstream populations[[3]](#footnote-4). The federal government has also allocated funding through the Rehabilitation of High Hazard Potential Dams Program aimed at assisting the technical, planning, design, and construction of eligible dams. Both these programs received a significant amount of funding from the Infrastructure Investment and Jobs Act of 2023[[4]](#footnote-5).

### Unsafe Dam State Revolving Fund

DEC administers the Unsafe Dam Revolving Fund, a special fund that provides funding to municipalities, nonprofit entities, and private individuals, for the reconstruction, repair, removal, breaching, draining, or other action necessary to reduce the threat of a dam or portion of a dam determined to be unsafe pursuant to section 1095 of 10 VSA Chapter 43. The dam must first be found to be unsafe via the process laid out in statute for an owner to qualify for funding (see below). Funding is typically provided as a loan, though under some circumstances a portion of the funding is provided as a grant.

### High Hazard Potential Dam Grants

DEC administers rehabilitation of High Hazard Potential Dams Grant (HHPD). HHPD provides technical, planning, design and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams.

## Outcomes and Opportunities

In 2022, the VEM Hazard Mitigation Team had unprecedented levels of funding available to assist communities in reducing their risk, at a total of $37 million across programs. Hazard mitigation funding has enabled the implementation of projects across the State that have reduced Vermont’s risk to hazards.

[Figures with funding totals of various programs since 2018 and spending categories]

The effectiveness of these projects has at times been dramatically demonstrated. The Melrose Terrace project in Brattleboro, implemented using funding from both HMA and FRCF, restored the floodplain functionality of five acres that had previously been the site of a public housing development. The project worked as intended during a severe storm event in late December 2022 that dumped as much as two inches of rain across the State, compounded by snowpack melt. By design, the project area flooded, keeping destructive waters away from vulnerable structures and residents. While the storm was significant enough to warrant a federal disaster declaration elsewhere in the State, Brattleboro and Windham County experienced relatively little damage. [Add photos]

The tapestry of funding sources available for hazard mitigation in Vermont creates opportunities and complications. The variety of sources help smooth out volatility in the amount of funding available for any one program.

One of the most significant challenges with accessing HMA funding to reduce flood risk in Vermont is the lack of understanding at a federal level of Vermont’s erosion risk. The significant focus on the SFHA, which defines inundation flood, and does not represent Vermont’s most significant hazard, which is based on rivers moving overtime and eroding riverbanks (see: Section 4: Vermont Profile and Hazard Assessment).

$11.2 million in HMGP funding was recently available under DR-4532, owing to the magnitude of the COVID-19 disaster declaration – however, Vermont encounters significant challenges through the administration of the HMGP program. There are specific project types that fit well under this program, such as upsizing transportation infrastructure and property buyouts within the SFHA, however, it can be challenging to apply for projects that do not perfect fit the mold of these very limited project types. One specific example is the limited interpretation at Region I regarding the administration of project scoping applications, or “advanced assistance” – which is intended to allow funding for project development. Based on interpretation at Region I, this funding is only allowed when the resulting application can be applied for under the same round – which would require that a scoping project be applied for immediately following a declared disaster. Another example is applying for planning activities, to include Local Hazard Mitigation Plan (LHMP) development, as well as applications under the 5% Initiative, which allows for education and outreach activities as well as generators. When BRIC funding is available, this program has been used instead for these project types due to VEM’s inability to get them funded under HMGP, despite their eligibility within HMA Guidance.

The yearly BRIC program has allowed for significantly more flexibility and adaptability than its predecessor, the Pre-Disaster Mitigation (PDM) program. The state allocation provides more regularity in available funding and the state allocation has been increasing in recent years, going from $600,000 in FY 2020 to $1 million in FY 2021 to $2 million in FY 2022. This increase in the state allocation has been valuable for states like Vermont and has allowed significant flexibility in the submission of a range of scoping and planning activities. While this pot of funding allows for larger competitive applications above the state allocation, Vermont would have a hard time accessing this funding based on the competitive criteria in prior BRIC Notice of Funding Opportunities (NOFOs), which significantly prioritizes funding for states with statewide commercial and residential building codes. While Vermont does have a commercial building code, there has historically not been broad political support for a statewide residential building code. Given Vermont’s significant erosion-based risk (noted above and discussed in more details in Section 4.1 Inundation Flooding & Fluvial Erosion), where the State allows development is significantly more important than exactly how residential structures are developed. This distinction is additionally addressed through plan actions within Section 6: Mitigation Strategy.

The creation of FRCF, a top plan priority in the 2018 SHMP, not only significantly increased the funding available for flood reduction in the State but created a mechanism for better addressing the gaps we see in FEMA funding availability, to include projects that better address Vermont’s erosion-based risk. The priority project type under FRCF is the buyouts of properties that are outside of the SFHA. Additionally, FRCF allows for the buyout of vacant parcels with development pressures and the conservation of headwater storage areas. Through the expansion of eligible project types, the streamlined application process, expansion of the type of eligible applicants, and significant dedicated support from VEM staff, the program has additionally been able to reduce the significant equity concerns that we see within FEMA HMA programs. Due to its flexibility, FRCF can reach communities and individuals that would not have had access to HMA funding.

The most significant example of this is the new process for property buyouts that is under development within manufactured housing communities. [Tri-Park Case Study – side bar]

However, even with the variety of resources available, the State must continue exploring potential long-term funding sources. The State expects to receive less HMGP funding in the near-term, and FRCF’s seed funding from ARPA resources need to be obligated by the end of calendar 2024. Establishing a State mechanism to fund FRCF is perhaps the most promising approach for funding sustained hazard mitigation activities. Vermont can also pursue additional federal funding. FEMA’s recently established Safeguarding Tomorrow through Ongoing Risk Mitigation (STORM) program provides participating states with funding to create a revolving loan program. The State could also consider taking action to address the systemic circumstances that hamper its competitive grant applicants to FMA and the BRIC national competition, such as FEMA’s emphasis on statewide building codes. Vermont can also explore funding from other sectors. For instance, while the philanthropically funded Vermont Disaster Recovery Fund makes grants to households to aid in post-disaster recovery, there is not currently a corresponding mechanism in that sector for hazard mitigation activities.

Navigating the tapestry of funding opportunities can create administrative burden for local communities with limited capacity to navigate the different scopes and requirements of the various programs. The State makes efforts to ease this challenge. VEM, for example, works with communities to determine which of the grant program would be the best fit for each project. However, this challenge compounds when different programs are spread across multiple State agencies. Continued efforts at effective interagency coordination can ensure communities can avail themselves of the most apt program for their specific projects.

Cognizant of the capacity constraints facing Vermont’s many small communities, the State has placed an emphasis on providing technical support throughout the grant process. For instance, VEM’s success in streamlining the application requirements for certain projects like buyouts has reduced the demands on local officials. Yet despite these successes, capacity constraints can continue to challenge the implementation of hazard mitigation activities, especially for certain programs with more onerous and complicated requirements. The State agencies administering these programs must continue to develop bespoke resources and redouble efforts to provide meaningful technical assistance.

The Stafford Act includes language on providing more equitable funding to “small and impoverished communities,” now known as Economically Disadvantaged and Rural Communities (EDRCs), through FEMA’s hazard mitigation assistance programs. An EDRC is eligible for up to 90% federal cost share and 10% non-federal cost share for their mitigation planning and project sub-applications in accordance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act. That is 60% in the required non-federal match funding, lessening local taxpayer burden, which is significant for most small municipalities in Vermont.

VEM officially mapped EDRCs for the first-time during BRIC 2022 application development. EDRCs need to be remapped each year in accordance with the Stafford Act definition:

* Populations are less than 3000; and
* Average per capita annual income of residents does not exceed 80% of the national, per capita income, based on best available data; or
* The local unemployment rate exceeds by one percentage point or more, the most recently reported, average yearly national unemployment.

For the BRIC 2022 application VEM utilized data from the 2020 US Decennial Census for population numbers, 2020 American Community Survey for average per capita income, and 2021 Bureau of Labor Statistics annual aggregate data for unemployment rate. Given the discrepancies within the data available for such small communities, VEM accounted for margin of error in calculations by subtracting half the margin of error for each jurisdiction’s per capita income from the ACS 5-year estimates.

[Insert EDRC maps]

What was not included in the first EDRC analysis was the last piece of the small and impoverished communities’ definition in 44 CFR § 201.2, the Stafford Act. The full definition gives the State the opportunity to identify additional factors that qualify a community as an EDRC. These additional factors must be included in the State Hazard Mitigation Plan.

Two efforts discussed under Planning and Interagency Coordination - the Municipal Vulnerability Index (MVI) as part of Vermont 2020 Global Warming Solutions Act and the mapping of environment justice communities as part of Vermont’s 2022 Environmental Justice State Policy – will identify Vermont’s EDRC’s based on multiple factors that are locally relevant.

VEM plans to revise the 2023 State Hazard Mitigation Plan to include the state-specific additional factors in determining an EDRC upon completion of these initiatives.

[Case study call outs re: the interviews completed around VEM buyout program]

# Standards and Permitting

## National Flood Insurance Program

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on public and private structures by both providing insurance and encouraging proactive adoption and enforcement of floodplain management regulations.[[5]](#footnote-6) Though a federal program, NFIP is largely administered by municipal floodplain managers in participating communities. Program oversight and technical assistance is provided by the State Floodplain Manager & NFIP Coordinator at the Agency of Natural Resources’ Department of Environmental Conservation (DEC). Permitting support for locals is provided through their DEC regional floodplain manager, of which there are five across Vermont.[[6]](#footnote-7) Vermont is unique, in that State statute requires communities to submit floodplain development permit applications to DEC for review and comment. DEC regional floodplain managers provide technical review and written comments to assist communities in administration and enforcement of their adopted flood hazard regulations. The Vermont NFIP Coordinator also works with other State agencies including VEM and the Department of Financial Regulation, as well as with the RPCs, participating municipalities, and the FEMA Region 1 Floodplain Management and Insurance Branch.

Acts 138 (2012) and 107 (2014) required the Agency of Natural Resources to adopt a flood hazard area and river corridor rule to regulate activities exempt from municipal regulation and ensure that the State is compliant with NFIP. Activities regulated under the rule include State-owned and operated institutions and facilities, required agricultural and silvicultural practices, and power generating and transmission facilities regulated under the Public Utility Commission. The Flood Hazard Area & River Corridor (FHARC) rule[[7]](#footnote-8) went into in effect in 2015 and exceeds NFIP minimum standards. Specifically, the FHARC rule employs a No Adverse Impact set of standards that includes a 2-foot freeboard requirement, a compensatory flood storage standard, and a river corridor performance standard in consideration of riverine erosion hazards. The standards in the rule served as the framework for the 2018 update to the State model flood hazard regulations discussed below. [Figure 14, 2018 SHMP p.29]

In addition to providing insurance, NFIP is also responsible for developing Flood Insurance Studies (FISs) and Flood Insurance Rate Maps (FIRMs), which are used as the basis for identifying flood hazard areas where floodplain management and mandatory flood insurance purchase requirements apply. Given their regulatory authority, these FISs and FIRMs are not available in certain areas of the State and are highly variable and often inaccurate in others, making access to NFIP difficult for some, while creating an unnecessary burden for others. For example, a community whose FIRM was last updated in the 1980s may not consider how the river has meandered over the decades, effectively removing some structures from flood hazard areas while including others that were previously not considered vulnerable. Additionally, the FIRMs are static maps depicting inundation hazards at the time of study. FIRMs do not consider the River Corridor – or the minimal land area needed by the river to be least erosive and store floodwater, sediment, and debris. Accordingly, these communities are unable to understand their true vulnerability to flood hazards.

Figure 14 shows a typical situation where the river corridor is much wider than the FIRM-defined flood hazard area due to the river being incised and not having access to its floodplain. This is a particularly dangerous situation whereby the river is highly energized and erosive due to most of the base flood being contained within the channel, yet the FIRM portrays very little risk outside the channel. The river corridor shows the area where the river will continually try to meander and thus, where flood-related erosion is very likely to occur. For more information on River Corridors, see Inundation Flooding & Fluvial Erosion.

NFIP has historically been the standard for floodplain management in Vermont. Unfortunately, the NFIP minimum standards adopted by most towns allow continued encroachment in floodplains and further degradation of the natural and beneficial floodplain functions, and therefore are insufficient at ensuring community resilience against flooding. In 2008, the NFIP Coordinator’s Office within DEC developed a suite of model flood hazard bylaws that went well beyond federal minimum standards. Following nearly a decade of implementation of those bylaws, DEC formed an external stakeholder working group in 2017 to review and provide feedback on new model bylaws that take into account best available data and lessons learned from the previous iteration. These bylaws, released in early 2018, significantly improve upon NFIP minimum standards and more appropriately address Vermont communities’ risk to flooding. DEC has developed a comparison of the NFIP minimum standards and the model bylaw higher standards, complete with a rationale for each of the State standards.[[8]](#footnote-9) The overarching goal of the higher standards is for communities to manage for inundation flooding *and* fluvial erosion hazards via a No Adverse Impact strategy that ensures development is flood resilient, does not increase flood hazards, and protects remaining floodplain resources to store and convey floodwater. As of May 1, 2023, 97 communities have adopted a combination of higher inundation and erosion standards.

As of May 1, 2023, 247 Vermont communities, about 90% in all, participate in NFIP (Figure 15) and most of the non-participating communities are in very low population areas or have limited mapping products available. Since the previous Plan was adopted in 2018, three communities have joined the NFIP, while 27 communities remain non-participatory.

Based on current best available data in Vermont, over 10,000 structures are in a high-risk Special Flood Hazard Area. Of these structures, only around 11% are carrying some flood insurance through the NFIP.

FEMA’s National Flood Insurance Program Repetitive Loss (RL) data provide an overview of areas of the State that are vulnerable to repeated flood loss and damages. More information about Repetitive Loss can be found in Inundation Flooding & Fluvial Erosion.

[NFIP/Risk MAP status maps, see Figures 15-16, 2018 SHMP p.31]

### Risk Mapping, Assessment and Planning

An analysis of digital FIRM data in six counties for the 2018 SHMP indicated that 82% of stream miles do not have mapped Special Flood Hazard Areas. There is no mandatory flood insurance requirement as a result, yet flood losses are regularly experienced along these flooding sources. Unfortunately, these losses are not documented by way of a flood insurance claim due to lack of coverage.

Additionally, many towns have antiquated data supporting their mapped flood hazard areas, which do not take into account changes in geomorphology, hydraulics or hydrology, leaving many structures mapped incorrectly or not mapped at all. These mapping deficiencies create additional vulnerabilities to Vermont’s built environment, as accurate identification of structures relative to flood hazard areas is difficult to ascertain.

FEMA began updating FISs and providing digital FIRMs (DFIRMS) in 2005 through its Map Modernization and Risk MAP programs. The new flood maps will replace some maps that have been in effect for over fifty years. The new FISs are conducted within a watershed context and the maps themselves will be issued on a county-wide basis. The map updates will be informed by the high-quality topographic data from LiDAR and various modeling techniques.

DFIRM data is already available for six counties (Windham, Windsor, Rutland, Chittenden, Washington and Bennington) and seven communities (Bradford Village, Hardwick, Jay, Montgomery, Newbury, Stowe and Wolcott) (Figure 16). An important step for making flood hazard data more accessible and accurate, the statewide update process [hyperlink: https://floodtraining.vermont.gov/protection-tools/get-ready-new-fema-flood-insurance-rate-maps#status] is tentatively anticipated to be completed over the next five years.

DFIRM data are readily available through the ANR Natural Resources Atlas web mapping application.[[9]](#footnote-10)

### Community Rating System

A voluntary incentive program under NFIP, the Community Rating System (CRS) recognizes and encourages proactive floodplain management activities that exceed the minimum NFIP requirements.[[10]](#footnote-11) Communities that apply for and are admitted into CRS receive discounted NFIP premium rates for property owners in their jurisdiction in 5% increments, with those communities adopting the most stringent floodplain management policies and activities achieving greater discounts. The three goals of CRS are to reduce flood damage to insurable property, strengthen and support the insurance aspects of NFIP, and encourage a comprehensive approach to floodplain management.

Vermont has six CRS-participating communities, two of which meet the Class 9 standards (Bennington and Brattleboro), three that have achieved Class 8 status (Colchester, Montpelier, and Waterbury), and only one that has achieved Class 7 status providing a 15% discount on premium rates within the high-risk flood hazard area (Berlin). DEC Regional Floodplain Managers provide technical assistance to CRS communities and those interested in participating. DEC helps communities understand CRS requirements and achieve or maintain compliance with those requirements.

Recognizing the need to expand proactive floodplain management activities and policies across the State, the Vermont Emergency Relief and Assistance Fund (ERAF) criteria allow for greater allotment of State share following a declared disaster for communities that participate in CRS, among several other standards (see: ERAF). During the mitigation strategy development process of this Plan update, the Working Groups and Steering Committee identified promotion of participation in the CRS as an ongoing action to reduce community vulnerable to flood hazards (see: Mitigation Strategy). Unfortunately, given the rural nature of Vermont, with low town capacity and a lack of statewide adoption of the International Building Code, meeting the CRS requirements for even achieving base-level (Class 9) status presents significant challenges.

### Flood Training and Resources

In addition to working directly with municipal floodplain managers, DEC assists local communities administer NFIP and manage their floodplains through a variety of trainings and resources. DEC stages [trainings](https://floodready.vermont.gov/get_help/training_events) throughout the State and publishes its [*Make Room for Rivers*](https://floodtraining.vermont.gov/) training online. DEC maintains a suite of resources on [*Flood Ready Vermont*](https://floodready.vermont.gov/), including FAQs, guides, and case studies. This includes the [Procedure to Determine Substantial Damage or Substantial Improvement](https://dec.vermont.gov/sites/dec/files/wsm/rivers/docs/SI_SD%20Community%20Procedure_11-7-18.pdf) to guide local floodplain managers administer the NFIP substantial damage rule following a flood event. Local officials are encouraged to further coordinate with their DEC Regional Floodplain Manager during the substantial damage determination process.

DEC also hosts monthly online drop-in sessions, informal gatherings where municipal officials and other stakeholders can ask questions of DEC and discuss floodplain management topics. Lastly, DEC manages the Flood Resilience Listserv through which new resources and training opportunities are disseminated to stakeholders throughout the State.

## Building Codes

Vermont has adopted building codes for public and commercial building safety and energy standards. The energy code also applies to residential buildings. Vermont’s Division of Fire Safety enforces the 2015 National Fire Protection Association (NFPA) 1 Fire Code, 2015 NFPA 101 Life Safety Code, 2015 International Building Code (IBC), 2017 NFPA 70 National Electrical Code, 2021 International Code Council (ICC) International Plumbing Code, and 2015 National Board Inspection Code from the National Board of Boiler and Pressure Vessel Inspectors. The Division of Fire Safety is currently implementing a BRIC grant to update current Building Codes to the 2021 International Building Code (IBC) and the 2021 National Fire Protection Association (NFPA) 1 & 101 and their referenced codes and standards.

Vermont does not have a statewide residential building code, as the adoption and enforcement of residential building code in Vermont is determined at the local level (24 V.S.A. § 3101). The potential hazard mitigation value of a statewide code in Vermont is currently unquantified. While [nationwide research has highlighted the value, on average, of residential building codes](https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes-save-study), Vermont’s specific circumstances may limit the applicability of these general findings. While building codes can significantly mitigate a handful of hazard risks, Vermont is not at high risk of many of these hazards, including earthquakes, hurricanes, and tornadoes. While riverine flooding poses a high risk to the State, its most damaging impact in Vermont is fluvial erosion. Building codes may be of limited efficacy against an erosive hazard that can washout the land from underneath a building. This informs the State’s emphasis on helping residents build in safe and sustainable locations, rather than stipulating exactly how Vermonters build their homes.

Nonetheless, a statewide residential building code still has the potential to produce cost-effective hazard mitigation benefits, especially for hazards like inundation flooding and high winds. The State intends to study the efficacy of potential residential building codes in Vermont to better inform building code discussion among policymakers (see action number 20 and 22 in the Mitigation Strategy).

Currently, the most visible impacts of Vermont’s lack of a statewide code are the federal policy disadvantages it creates. It significantly undermines the ability of the State’s HMA subapplicants to succeed in competitive grant programs like the BRIC National Competition and FMA that penalize subapplications from jurisdictions without a statewide code. Lack of building codes also Vermont communities participating in CRS from achieving Class 6 or lower. These circumstances create tangible financial repercussions in the form of foregone hazard mitigation grants and reduced insurance rates.

## Wetland Rules

Vermont’s Wetland Rules regulate activities in wetlands and their buffer zones (Vt. Code R. 12 004 056). Wetlands are subject to these rules based on the extent to which they provide certain public benefits, including water storage capacity for flood water and storm runoff. Enforced by ANR, the Wetland Rules require that those intending to undertake certain restricted activities acquire a permit. Permit applicants must demonstrate that their intended activities will not lower the quality of the wetland's protected functions and values, including water storage.

## Transportation Standards

Since 2003, VTrans has constructed and updated over $1 billion of infrastructure to more resilient and modernized standards for bridges and culverts. These standards consider all of the natural processes that happen in a water way, including sediment and debris transport.

VTrans continues to modernize Vermont’s infrastructure every year by these design processes and standards, which considerably increase the resiliency in the upgraded infrastructure. Structures that span bank full width typically allow for more flow to pass at lower velocities and significantly reduce the likelihood of debris or sediment build up. Although Tropical Storm Irene was very destructive, very few structures built to modern standards failed, which validated that the VTrans process established a more resilient transportation system.

### Hydraulics Manual Update

The Hydraulics Manual and Hydraulic Standard were updated to incorporate sediment flow data and bank-full width. The updated design standard, specifically for bridges and culverts, better reflect likely sediment flow based on the natural width of each channel and is more resilient to flooding. Establishment of this statewide standard ensures that FEMA’s cost share will be based on the cost to re-build a damaged bridge or culvert in a manner that is resilient to future floods.

## Dam Safety Program

The Dam Safety Program (DSP) regulates non-power, non-federal dams and acts as the owner and operator at 14 State-owned dams. On the regulatory side, the DSP administers State Statute 10 V.S.A. Chapter 43, managing the Vermont Dam Inventory (see below), a permit program for construction and alteration of dams, an inspection program, an annual registration program, and other related tasks. The DSP also educates dam owners and the public about dam safety issues. On the ownership side, the DSP operates and maintains the three Winooski River Flood Control Dams (Waterbury, Wrightsville, East Barre) as well as eleven other dams throughout the State.

# Databases and Mapping Tools

## Natural Resources Atlas

The Natural Resources Atlas is a mapping tool managed by ANR that provides geographic and environmental information about sites across the State. Atlas users can navigate to areas of interest by entering an address or using the map display and toggle on or off numerous data layers.

[screenshots of the various tools? See Mitigation Planning - State\ SHMP - 2023\Graphics\Section 3]

The tool is frequently utilized by hazard mitigation planners. The Atlas includes several data layers particularly relevant to planning, including regulatory flood hazard areas, landslides, and invasive species infestation.

## Functioning Floodplain Initiative

Vermont’s Department of Environmental Conservation is leading the multistakeholder Functioning Floodplain Initiative (FFI) to identify areas where nature-based projects can have the biggest impact advancing environmental goals. Following a multi-year process of data collection and analysis, DEC is currently in the process of rolling out the mapping tool for public use.

FFI includes a flood resiliency component (along with water quality and ecological integrity components). The FFI analyzes hydrologic data and models fluvial processes to gauge a site’s potential for increased floodplain storage capacity, and resulting benefits to public safety and property protection. By comparing these potential benefits against the costs of protecting or restoring floodplain functionality, FFI produces a score that can help guide project prioritization.

## Transportation Resilience Planning Tool

VTrans’ Transportation Resilience Planning Tool (TRPT) is a web-based application that identifies bridges, culverts, and road embankments across the State that are vulnerable to damage from floods, estimates risk based on the vulnerability and criticality of roadway segments and identifies potential mitigation measures. Development of the tool in pilot watersheds was funded through the DR-4022 subgrant to update the 2018 SHMP and the full State was completed in 2023. The TRPT combines river science, hydraulics and transportation planning methods and is applied at a watershed scale. It identifies vulnerabilities in a proactive manner to avoid or mitigate against the impacts of future damages in the most critical, highest risk locations. The TRPT is incorporated in Vermont Project Selection and Project Prioritization, the mechanism VTrans’ uses to identify, prioritize, and select state transportation capital improvement projects.

A statewide training effort is underway to provide training on the TRPT to a wide variety of users, including District staff, project designers, local municipalities, and regional planners. The TRPT will be used to inform transportation corridor plans, tactical basin plans, project scoping, capital programming and hazard mitigation planning for state and local highways. Several actions within the Mitigation Strategy relate to the expansion of this tool (actions 3, 4, and 103).

## Department of Health Extreme Heat Resources

The Vermont Department of Health has several resources to assist local planners and other stakeholders identify and mitigate the risks of extreme heat to their community. The Heat and Health Data dashboard visualizes the growing risk of extreme heat in the State and the consequences to public health. The dashboard breaks out data on the county-level data for heat indices and thresholds, the number of excessive heat days, and heat-related emergency department visits. The Local Hot Weather Preparedness Guidance includes additional information on extreme heat risks and recommended actions, including adaptation and mitigation measures, for planners to consider. Planners and residents alike can also utilize the interactive map of Vermont’s indoor cooling sites, beaches, pools, and other recreational water sites.

## Vermont Dam Inventory

The Vermont Dam Inventory (VDI) is a database containing spatial, structural, historic, and regulatory information on most dams in Vermont. Data contained within VDI is managed by the Dam Safety Program within ANR.

## Municipal Vulnerability Index

The Climate Action Office at the Agency of Natural Resources is working to develop a tool called the Municipal Vulnerability Index (MVI) which is a requirement of the Global Warming Solutions Act, and a key recommendation in [Vermont’s Climate Action Plan](https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/Initial%20Climate%20Action%20Plan%20-%20Final%20-%2012-1-21.pdf). The MVI will be a mapping tool with the goal of helping to identify where Vermont communities are most vulnerable to climate change, with a focus on pressures that climate change will place on Vermont’s transportation, electric grid, housing, emergency services, and communications infrastructure. The tool is intended for primary use by municipalities to assist in planning for and implementing projects to address climate change. The MVI is expected to be completed in early 2024.

## Climate Toolkit

The Vermont Climate Toolkit is being developed through a multi-stakeholder task group comprised of State agency staff, municipal volunteers, and technical assistance providers, with primary support from the Climate Action Office (see below). The Climate Toolkit will connect municipalities with climate action resources. This toolkit will include resources that cover a broad approach, including public health, frontline and impacted communities, how to support a just transition, and how to reach rural communities. The intent is to provide a centralized source for the information relevant for designing and implementing climate action measures or strategies, as well as information on financial resources and technical assistance. The toolkit will also provide opportunities to connect with state agencies and other engaged practitioners for technical advice and expertise.

## National Risk Index

The National Risk Index (NRI) is an interactive tool that shows which communities are most at risk to a range of natural hazards. It includes data about the expected annual losses to individual hazards, social vulnerability, and community resilience. Maintained by FEMA, the NRI enables users to view hazard information at Census tract level, and the map display provides a valuable visualization of vulnerability within a jurisdiction.

# Planning and Interagency Coordination

## Climate Action Plan

In September 2020 the Vermont State Legislature passed the Global Warming Solutions Act (GWSA, Act 153), which created legally binding greenhouse gas emissions reduction requirements; established a Vermont Climate Council; and directed the Council to consider opportunities for carbon sequestration through conservation, and, most relevant to hazard mitigation efforts, strategies for helping Vermont communities prepare for the impacts of climate change. The Vermont Climate Council is made up of 23 members appointed from the Governor’s Cabinet, the House of Representatives, and the Senate Committee on Committees. The Council was charged with writing a Climate Action Plan, due by December 1st, 2021, that outlines actions for the state to meet its greenhouse gas reduction requirements, increase its potential for carbon sequestration, and prepare for the impacts of climate change. The Council is required to update the Climate Action Plan every four years thereafter.

The process of creating the CAP brought partners together from across State government and non-governmental organizations with technical expertise in climate change or that could represent stakeholders. Climate Council and steering committee meetings were held throughout 2021 to draft the [Initial Climate Action Plan](https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/Initial%20Climate%20Action%20Plan%20-%20Final%20-%2012-1-21.pdf), and continue to be held to prepare for the update to the Climate Action Plan due in July 2025.

### Rural Resilience and Adaptation Subcommittee

Members of the VEM Hazard Mitigation team provided staff support to this subcommittee of the Climate Council during development of the Initial Climate Action Plan. The Rural Resilience and Adaptation Subcommittee, co-chaired by the VEM Director, championed the inclusion of funding for the Flood Resilient Communities Fund in the State’s allocation of American Rescue Plan funding.

The early stages of the 2023 SHMP update were coordinated with the CAP development. VEM staff serving on the Rural Resilience and Adaptation Subcommittee worked to ensure 2018 SHMP actions were included for consideration and eventual adoption into the Initial Climate Action Plan. Where actions were not directly adopted from the SHMP for CAP, actions were reviewed to ensure the plans supported each other.

### Climate Action Office

The Vermont Climate Action Office (CAO) is a division within the Agency of Natural Resources and coordinates and provides expertise and capacity on state-led climate initiatives, as well as the monitoring, assessment and tracking of climate adaptation, greenhouse gas mitigation, and resilience activities necessary to evaluate programs over time in achieving the requirements of the Global Warming Solutions Act (GWSA, Act 153) through implementation of the Climate Action Plan (CAP). The CAO is focused on three core areas:

* Climate Program Coordination
* On-going support of implementation of the Global Warming Solutions Act
* Community and Stakeholder Engagement

### Inter-Agency Advisory Board

The Inter-Agency Advisory Board to the Climate Action Office advances coordination across State agencies on climate action. The Board is composed of representatives from the Agency of Agriculture, Food, & Markets, Agency of Commerce and Community Development, Agency of Human Services, ANR, VTrans, Department of Buildings & General Services, Department of Public Service, Vermont State Climatologist, and VEM. The Board meets regularly to coordinate on climate action across State government with a focus on the following objectives:

* Provide a space for proactive coordination on climate action across State government.
* Articulate where policy and financial implications overlap around climate action to ensure resources are maximized.
* Support the monitoring of progress over time in meeting the State’s climate goals and requirements.
* Identify and frame up gaps where the CAO might prioritize support.
* Develop state positions on issues related to climate change.

## Vermont Silver Jackets

Silver Jackets teams, facilitated by the U.S. Army Corps of Engineers (USACE), exist in all states and several territories of the United States. Silver Jackets Program Goals are to:

* Facilitate strategic life-cycle flood risk reduction.
* Create or supplement a continuous mechanism to collaboratively solve state-prioritized issues and implement or recommend those solutions.
* Improve processes, identifying and resolving gaps and counteractive programs.
* Leverage and optimize resources.
* Improve and increase flood risk communication and present a unified interagency message.
* Establish close relationships to facilitate integrated post-disaster recovery solutions.

The Vermont Silver Jackets team includes representatives from VEM Recovery and Mitigation Section, Vermont Agency of Natural Resources Floodplain Management Section, USACE, FEMA, National Weather Service, U.S. Geological Survey, and the Natural Resources Conservation Service. Other agency partners or local stakeholders are brought in as necessary. Facilitated by USACE, the team meets quarterly to discuss agency updates, how to address flood related challenges through collaboration and resource sharing, and progress in ongoing projects.

Projects are typically completed through the Flood Plain Management Services (FPMS) annual funding for interagency nonstructural work. Funding is applied towards time USACE staff can dedicate to a project, and is not a financial award to the state. Authorized by Section 206 of the Flood Control Act of 1960, as amended (33 U.S. Code § 709a), the FPMS program addresses the need of people who live and work in floodplains to know about flood hazards, and the actions they can take to reduce property damage and prevent the loss of life caused by flooding.

Projects may address any or all portions of the flood risk management life cycle (prepare, respond, recover, and mitigate.) Projects focus on approaches that utilize the USACE’s expertise in engineering to provide local communities and states with technical and planning assistance regarding the development and implementation of nonstructural approaches to manage and reduce flood risks. Nonstructural measures promote solutions that reduce flood consequences, as opposed to solely engineered solutions that reduce flood hazards. Natural and nature-based approaches are encouraged when consistent with the state of understanding and uncertainty regarding their flood risk management benefits and may be submitted when they promote nonstructural solutions.

### Brandon Flood Loss Avoidance Study

The Brandon, Vermont Flood Loss Avoidance Study set out to demonstrate that mitigation projects are cost-effective and help communities and government agencies decide to continue supporting them. In Brandon, an overflow culvert for the Neshobe River under Route 7 was designed and constructed in 2017 using a FEMA Hazard Mitigation grant of $2.55M. Five properties were acquired, one on Wheeler Road in 2013 and four on Newton Road in 2016 and 2019.

The Flood Loss Avoidance Study for the Neshobe River Overflow Culvert and six property buyouts in Brandon would quantify flood losses avoided due to the implementation of the projects and generate continued support for flood mitigation in Vermont. This project addressed a priority action identified in the 2018 Vermont State Hazard Mitigation Plan, to complete loss-avoidance studies to better understand the positive impact of completed mitigation work, under a strategy to improve local leaders' understanding of hazard mitigation.

### High-Water Mark Signs

The 2022 interagency flood risk management proposal was to identify up to five flood-prone communities in Vermont that are interested in installing high-water mark signs and provide support for sign installation to improve local awareness of flood risk and flood risk management. Each community's sign would improve flood risk awareness among residents and visitors. This project addressed the key strategy identified in the 2018 SHMP to increase public knowledge and literacy of hazards and mitigation.

### High Hazard Potential Dams

The most recent project completed through the Silver Jackets FPMS interagency nonstructural program was developed to address the recent changes in state hazard mitigation planning guidance and policies effective April 2023. One element of these changes will be to incorporate High Hazard Potential Dam (HHPD) Grant Guidance into State and Local Hazard Mitigation Plan required elements.

The HHPD section will be required if a state or local government plans to apply for HHPD project funding from FEMA. Applicants to the HHPD grant program must have in place a FEMA-approved state hazard mitigation plan that includes all dam risks and complies with the Disaster Mitigation Act of 2000 (Public Law 106–390; 114 Stat. 1552). Additionally, the local government with jurisdiction over the area in which the dam is located must have a FEMA-approved hazard mitigation plan that includes all dam risks. In order to achieve this requirement, VEM and the Vermont Office of Dam Safety will utilize technical assistance through the Silver Jackets program to conduct a risk assessment for HHPDs.

USACE used available tools to analyze data provided by the Office of Dam Safety. The study identified potential hazards to HHPD dams as well as the potential significant economic, environmental, and social consequences of dam incidents.

## Environmental Justice Policy

In 2022, Vermont enacted a statewide environmental justice policy through Act 154. The Act codifies Vermont’s commitment to providing a proportional number of resources to environmental justice populations for resilience planning and disasters recovery, among a number of other aims. The Act directs numerous State agencies, including ANR, VTrans, and DPS, to embed environmental justice consideration into their operations. Under this policy, these agencies will be required to develop community engagement plans focused on environmental justice populations and report annually on their alignment with the policy. The Act also directs ANR to create an environmental justice mapping tool.

### Environmental Justice Advisory Council and Interagency Environmental Justice Committee

The Act established two entities to coordinate and make recommendations regarding implementation of the policy. The Environmental Justice Advisory Council is a multi-stakeholder body that includes representatives from municipal government, social justice organizations, mobile home park residents, environmental justice populations, and Native tribes. Members chosen based on expertise in environmental justice principles and commitment to achieving environmental justice in Vermont.

The Interagency Environmental Justice Committee is composed of representatives of the covered agencies, to include VEM’s State Hazard Mitigation Officer. The committee coordinates the implementation of the policy through tasks such as establishing principles to guide the development of the community engagement plans.

## Transportation Planning

### Resilience Improvement Plan

As a preliminary step to operationalizing the PROTECT program (see above), VTrans is finalizing the Resilience Improvement Plan (RIP). RIP will identify and analyze Vermont’s transportation vulnerabilities to hazard risks. RIP will also develop a framework for project selection and implementation to guide deliberative use of PROTECT funds. Completing RIP will also reduce the non-federal cost share for projects under PROTECT – generally 20% – by as much as ten percentage points.

### 2040 Vermont Long-Range Transportation Plan

The 2040 Vermont Long-Range Transportation Plan (LRTP) is the State's long-range, transportation plan for all modes of travel. To address the challenges presented by increasingly frequent and severe extreme weather events, LRTP includes a specific directive to “Improve the resilience of the transportation system.” The strategies identified as part of meeting this goal include designing infrastructure to withstand severe weather events, advancing VTrans' understanding of transportation system vulnerabilities to severe weather events, incorporating resilience as a factor in project prioritization and design, and providing technical assistance to municipalities to prepare for, withstand, and recover from severe weather events.

### Transportation Asset Management Plan

VTrans’ 2022 Transportation Asset Management Plan includes a strong theme of resilience throughout to tie together the Transportation Resilience Planning Tool (see above) with asset needs across the state to mitigate risk in the investments we make.

## Energy Planning

### Integrated Resource Plans

Pursuant to 30 V.S.A. §218c, each regulated electric or gas company in Vermont is required to prepare and implement an integrated resource plan (IRP) for provision of energy services to its customers. IRPs promote hazard mitigation by requiring utilities document their plan for tree trimmings and removals within utility line right of ways. IRPs are also required to evaluate potential investments to improve system reliability, including actions to protect or relocate facilities within floodplains.

Utilities update their IRPs every three years. IRPs are submitted to PSD, which also provides technical assistance during the planning process. Technical assistance often includes guidance on line upgrades and substation relocation to improve resilience to hazards.

### Municipal and Regional Energy Planning

The Energy Development Improvement Act (Act 174) established a set of municipal and regional energy planning standards. Use of these standards are voluntary, but municipal and regional energy plans that meet them are entitled to “substantial deference” in the siting process for energy generation. Act 174 promotes hazard mitigation by incentivizing local planners to analyze the suitability of potential energy generation sites. Among the siting constraints planners must consider are regulatory floodways and river corridors. Act 174 plans bolster the resiliency of utilities by noting where such constraints make a location unsuitable for siting.

## Nutrition Security Plan

A multi-stakeholder effort led by Vermont Farm to Plate and the Vermont Sustainable Jobs Fund is currently underway to develop a nutrition security plan for the State. The plan will focus on strategies to end food insecurity at the systemic level and strengthen local food supply chains. Prompted by response efforts to supply chain disruptions caused by the COVID-19 pandemic, the plan will likely contain broader insights about strengthening the resilience of Vermont’s food system to hazard risks.

# Local Hazard Mitigation Planning

As of June 2023, 177 Vermont cities, towns, and villages have a current local hazard mitigation plan (LHMP), a coverage rate of 63%. Another 31 communities have a LHMP that has expired within the past year. This suggests that around nearly 75% of communities in the State have recently engaged in local hazard mitigation planning.

Local planning is important in multiple respects. The planning process spurs local officials to deliberate on their community’s hazard risks and raises awareness amongst other stakeholders. The final plan serves as a valuable resource, with localized risk assessments and an action plan for mitigating those risks. After the plan is finalized, the community continues to monitor and evaluate the effectiveness of the plan, further spurring action on hazard mitigation.

LHMPs are also important because they enable access to funding for mitigation actions. FEMA HMA funding (see above) is generally only available to communities with a current, FEMA-approved LHMP.

## Plan Development and Approval Process

LHMPs must satisfy the requirements of FEMA’s Local Mitigation Planning Policy Guide (“the Guide”) to receive FEMA approval. The Guide includes both procedural and substantive requirements. Communities must undertake a plan development process and engage with various stakeholders. The resulting plan must include components like a hazard risk assessment and a mitigation strategy.

Communities then submit their draft LHMP to VEM. Within 45 days, VEM evaluates whether the draft plan meets the requirements of FEMA’s Guide. VEM works with the community on any revisions that are required to meet the Guide, and the community re-submits any subsequent drafts to VEM.

When VEM issues a determination that a draft LHMP satisfies all the requirements, that plan must then be adopted by the community, typically through a resolution of the community’s Selectboard or Trustees. Once VEM confirms the plan’s adoption, VEM formally approves the LHMP. The plan is then in effect for five years from the date of formal approval.

### Program Administration by States

Since 2019, VEM has participated in FEMA’s Program Administration by States (PAS) for reviewing local plans. VEM sought and received acceptance into PAS, a mitigation action identified in the 2018 SHMP, by demonstrating its capacity and commitment to hazard mitigation. Vermont’s participation in PAS has made the plan approval process significantly more efficient.

PAS does not alter the requirements for LHMP approval; plans must still satisfy all the requirements of FEMA’s Guide. Rather, PAS modifies the approval process. Previously, all draft plans reviewed by VEM were forwarded to FEMA, which would then commence its own review. FEMA made the final determination on a plan’s compliance with the Guide. Now, under PAS, VEM has been delegated the authority to evaluate draft plans and issue formal approval when it determines that all requirements have been met. FEMA is notified when a plan is approved and conducts periodic spot-checks of approved plans to ensure continued adherence to the Guide.

Participation in PAS has made the plan approval process much more efficient and is a partnership with planners at FEMA Region I. The multiple layers of review prior to PAS were a source of significant delay at the end of what remains a typically lengthy plan development process. Community frustration with these delays could be compounded by a lack of status updates communicated by FEMA. PAS has enabled VEM to expedite the plan approval process and communicate more forthrightly with communities awaiting approval.

### Funding and Technical Assistance

VEM helps communities secure funding for local planning mainly through HMA (see above). For instance, in the three most recent BRIC cycles, VEM has applied for and managed funding for the creation or update of 112 local plans. VEM works with Regional Planning Commissions (RPCs; see below) to identify communities without plans or with plans expiring shortly. VEM typically applies directly for HMA funding on behalf of communities seeking to create or update plans, prioritizing among communities expressing interest those whose plans expire earliest. This funding can then be used by the community. Vermont’s many small communities often use this funding to contract for the necessary planning expertise. Communities often work with their RPC to develop the plan, though independent consultants are also used in other instances.

VEM provides technical assistance to communities and local planners, answering inquiries throughout the plan development process. VEM also maintains a suite of local planning resources to guide planners through various facets of the process, including community engagement, risk data, and mitigation strategies. VEM also conducts periodic trainings for new local planners and convenes workshops where planner can exchange knowledge, skills, and resources.

## Outcomes and Opportunities

[LHMP status map, see Figure 13, 2018 SHMP p.25]

The technical demands of the LHMP development process present some inherent challenges for a state like Vermont, where most communities are small and face significant capacity constraints. However, Vermont has taken meaningful action to lower barriers. VEM’s process for securing funding for local planning and providing technical assistance has reduced the burdens on small communities and has likely increased local planning participation rates. RPC support for local planning efforts have meaningfully enhanced capacity and bolstered a local planning ecosystem in Vermont that also includes numerous private sector planning consultants. VEM’s PAS process has also fostered a more responsive approach to local planning and reduced the amount of time it takes to get a LHMP formally approved.

However, as evidenced by a survey of RPCs (see Vulnerability Summary), capacity constraints remain and continue to create issues for local communities. Participation remains spotty in some areas of the State where capacity is likely most limited. Around 100 communities have not made or updated a LHMP in the previous five years. Certain required components of local planning, such as gathering hazard data or identifying actions for certain hazards, remain onerous for small communities and discourage participation.

Even among participating communities, many have struggled to update their LHMPs before previous iterations expire. While communities are typically successful in getting updated LHMPs approved within a year of the previous plan’s expiration, the gap does create complications, most visibly regarding HMA and ERAF funding (see above). While these delays are attributable in no small part to the unprecedented disruptions to local governance wrought by the COVID-19 pandemic, they nonetheless warrant attention.

Beyond the planning process, there is variance among communities in the extent to which LHMPs facilitate meaningful hazard mitigation action. Following the plan development and approval process, some communities lack the capacity to effectively monitor implementation of LHMPs and the actions identified in them.

The State must therefore build on efforts to assist local communities and their planners. Additional capacity-building resources, including for RPCs, could enable greater participation by the smallest communities. VEM has continued to expand on its technical assistance, including now urging communities to begin thinking about funding multiple years before their current LHMP expires. And while a plethora of planning resources are available, VEM can focus on disseminating actionable guidance on the more vexing aspects of local planning, including using hazard data, identifying local mitigation actions, and on-going plan monitoring.

Mitigation actions are included in this Plan to address improved resources for local planning. The 2023 SHMP will in itself be a resource for local planning, particularly the evaluation of hazard probability and impacts (See Section 4). As part of plan implementation (see: Plan Maintenance) the 2023 SHMP will be shared with RPCs and local governments and ongoing technical assistance will be available through VEM.

# Other Local Capabilities

In addition to LHMPs, Vermont cities, towns, and villages typically have several other capabilities that support hazard mitigation.

## Municipal Plan

Many communities have municipal plans, which set overall goals and direction for growth and development for that community. Municipal plans typically include a flood resilience section that identifies flood hazard and fluvial erosion hazard areas, and recommends policies and strategies to mitigate risks to public safety, critical infrastructure, and other community assets (24 V.S.A. § 4382(12)). State law empowers communities with qualifying municipal plans to implement a range of other measures, including additional hazard mitigation capabilities.

### Capital Budget and Program

Communities with a municipal plan may implement a capital budget and program (24 V.S.A. § 4403(1)). Annual capital budgets lay out the capital projects to be undertaken by that community during the coming fiscal year, while a capital program is a five-year plan (24 V.S.A. § 4430). Communities can use their capital budget and program to plan for and implement a range of hazard mitigation activities, including improvements to infrastructure to increase resilience or acquiring land or easements in hazard-prone areas. The extent to which communities utilize their capital budget and program to advance hazard mitigation can vary greatly.

## Zoning Bylaws

Communities with a municipal plan are also authorized to enact a range of zoning and other land use bylaws (24 V.S.A. § 4402, 4410). Communities use these bylaws to regulate the use of land and the placement, spacing, and size of structures for the betterment of public health, safety, or welfare. Communities are expressly authorized to enact bylaws that regulate development in flood areas, river corridors, and other hazard areas (24 V.S.A. § 4424). Flood hazard area bylaws are common in Vermont and mitigate flood risk by limiting development in flood-prone areas. Such bylaws are also necessary for participating communities to comply with NFIP (see above).

### River Corridor Bylaws

As of July 3, 2023, ninety-eight (98) communities have opted to enact some form of river corridor (RC) bylaws that are even more protective against flood risk. These regulations are typically based on ANR’s model RC bylaws, and ANR assists communities in mapping their river corridors through a geomorphic assessment. RC bylaws limit development not only in the vicinity of a stream or river’s current path, but also within and nearby its meander belt, the area over which the stream or river’s path may move over time due to channel migration. RC bylaws thus protect homes, infrastructure, and other community assets by mitigating the risk of fluvial erosion over time.

## Town Road and Bridge Standards

Vermont cities, towns, and villages also frequently promote hazard mitigation by enacting road and bridge standards. VTrans developed and updates a set of model standards, which communities can adopt. Nearly all Vermont communities have enacted these standards, which regulate the construction, repair, and maintenance of local roads and bridges. The standards aim to, among other objectives, minimize damage to road infrastructure during flood events.

## Regional Planning Commissions

Vermont’s eleven Regional Planning Commissions (RPCs) were created by statute as nonprofit political subdivisions of the State [Figure 12 from 2018 SHMP, p.24] with boards of directors appointed by their member communities. In practice, they provide a variety of tasks at the regional level and in assistance to towns, often acting in certain capacities in lieu of county government.

The RPCs and local communities are in the best position to determine their own mitigation needs; therefore, the State relies on these entities to provide information to advance mitigation goals and priorities. Through a collaborative arrangement, VEM, RPCs, and towns identify and prioritize local mitigation needs. These issues are regularly discussed during monthly meetings between RPCs and VEM.

RPCs help towns determine the most appropriate mitigation policy and planning. RPCs work with local town officials to draft flood hazard bylaws, complete paperwork required for NFIP membership, develop mitigation plans, and provide direct grant writing and administrative assistance to local town officials to help implement mitigation projects.

Given the rural nature of Vermont’s communities, municipal capacity to develop, manage, and implement appropriate mitigation plans and measures is often insufficient. Accordingly, many towns across the State require assistance from their RPC and/or various State agencies to appropriately address hazard vulnerability.

## Community Action Agencies

Vermont has five regional Community Action Agencies (CAAs) that operate through federal, State, and private funding to provide programs and services to low- or moderate-income residents. CAAs work in a variety of mission areas including affordable housing, home weatherization, environmental justice, and, as illustrated most recently by COVID-19, disaster response and recovery. CAAs experience with these areas and focus on low- and moderate-income residents creates opportunities for advancing hazard mitigation, including through outreach to frontline communities.

## Outcomes and Opportunities

The local capabilities common to Vermont evince a pragmatic approach to addressing the capacity constraints on the State’s many small communities. The municipal planning process guided by State law creates a framework for aligning flood resilience with a community’s broader development goals. Model regulations like the RC bylaws and town and bridge standards provide a less burdensome means for communities to enact technical hazard mitigation regulations. And RPCs are a crucial source of expertise to local communities.

However, in a State where many local governments consist of a volunteer staff or a single town manager serving in multiple municipal roles, capacity constraints persist. Some of the smallest communities do not have the capacity to avail themselves of these common capabilities. And even for communities with these capabilities, capacity constraints may limit their effective implementation.

A chief issue is implementing hazard mitigation projects. While communities with LHMPs have identified the priority actions they can take to mitigate hazards, the plan itself is not a mechanism for their implementation. Capital budgets and programs are a potential mechanism for implementation, and LHMPs are supposed to be incorporated into them. However, the extent to which capital budgets and programs are used in practice to implement hazard mitigation projects can vary greatly among communities. Similarly, while numerous State and federal funding is potentially available, many communities do not have the capacity to routinely identify, apply for, and manage hazard mitigation grants.

The State can take several approaches to enhancing local capabilities, with a focus on increasing the capacity to effectively implement hazard mitigation projects. Communities could benefit from resources and training specifically geared towards effectively aligning planning efforts and incorporating hazard mitigation projects into municipal plans and capital budgets. And bolstering capacity might best be achieved at scale by increasing support for RPCs. This includes exploring whether the State should support a greater role for RPCs in assisting communities to manage grants and implement hazard mitigation projects which is addressed within the Mitigation Strategy.

1. https://www.fema.gov/fact-sheet/hazard-mitigation-under-individuals-and-households-program [↑](#footnote-ref-2)
2. https://governor.vermont.gov/sites/scott/files/documents/2022%20VT%20ARPA%20SFRF%20Governor%20Report\_vF.pdf [↑](#footnote-ref-3)
3. https://www.fema.gov/press-release/20221013/biden-harris-administration-awards-33-million-national-dam-safety-grants#:~:text=Over%20the%20next%20five%20years%2C%20FEMA%20will%20award,good-paying%20jobs%20and%20help%20address%20the%20climate%20crisis. [↑](#footnote-ref-4)
4. https://www.fema.gov/emergency-managers/risk-management/dam-safety [↑](#footnote-ref-5)
5. https://www.fema.gov/national-flood-insurance-program [↑](#footnote-ref-6)
6. http://dec.vermont.gov/watershed/rivers/river-corridor-and-floodplain-protection/floodplain-managers [↑](#footnote-ref-7)
7. http://dec.vermont.gov/sites/dec/files/documents/wsmd-fha-and-rc-rule-adopted-2014-10-24.pdf [↑](#footnote-ref-8)
8. http://dec.vermont.gov/sites/dec/files/wsm/rivers/docs/rv\_ModelFloodHazardBylaws\_HigherStandardsCrosswalk\_2018.pdf [↑](#footnote-ref-9)
9. http://anrmaps.vermont.gov/websites/anra/ [↑](#footnote-ref-10)
10. https://www.fema.gov/national-flood-insurance-program-community-rating-system [↑](#footnote-ref-11)