

3: State & Local Capabilities

STATE 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, the majority of State policies and programs aimed at improving mitigation are centered on inundation flooding and fluvial erosion.

In 2017, a thorough review of the capabilities within the State that directly or indirectly support hazard mitigation efforts was developed. Input from stakeholders was solicited during a Working Group meeting and information compiled from that meeting was disbursed to key individuals and focus groups for further input (see: [Planning Process](#)). The result of this robust process is the State capability inventory, which also identifies changes from the 2013 Vermont State Hazard Mitigation Plan, areas for improvement and any strategies or actions that address the capability in this Plan update (see: [State Capabilities List](#)).

Though this table addresses capability-specific areas for improvement, two mitigation strategies identified as top priorities in this Plan that will result in both improved existing and new capabilities are worthy of mention here. First, ensuring that State programs support hazard mitigation goals through a comprehensive audit of all State and Federal funding and technical assistance programs will allow partners to develop a set of planning principles to resolve potential conflicts and create synergies between these programs. Second, the 2017 review of capabilities identified a large number of data gaps that inhibit Vermont's ability to more comprehensively understand and, therefore, more effectively address hazard vulnerability. Accordingly, implementing the strategy to coordinate hazard mitigation mapping, data and research will have significant, positive impacts on improving existing capabilities and potentially creating new capabilities where Vermont is otherwise lacking.

Administration of specific programs, including Hazard Mitigation Assistance, Public Assistance, National Flood Insurance Program and Community Rating System are further detailed throughout this section.

Hazard Mitigation Assistance Program

The Hazard Mitigation Assistance (HMA) and Public Assistance (PA) Programs are administered in the State by Vermont Emergency Management's Recovery & Mitigation Section, overseen by the Recovery & Mitigation Section Chief. Both the HMA and PA Programs have two full-time employees. The State Hazard Mitigation Officer is responsible for administering the HMA Program, to include the three HMA grant programs (Hazard Mitigation Grant Program, Pre-Disaster Mitigation and Flood Mitigation Assistance), while the Hazard Mitigation Planner is responsible for Local Hazard Mitigation Plan (LHMP) technical assistance and review. The State Hazard Mitigation Plan is updated and maintained by both the State Hazard Mitigation Officer and Hazard Mitigation Planner.

Following Tropical Storm Irene, the Vermont State Hazard Mitigation Committee, with representatives from various State agencies, was formed to review HMA applications prior to FEMA submittal. In 2014, recognizing the need for elevation of mitigation priorities at the State policy level, the Vermont State Hazard Mitigation Committee was split into two distinct groups: the State Hazard Mitigation Project Review Committee (SHMPRC), a technical committee tasked with HMA application review, prioritization and submittal to FEMA, and the State Hazard Mitigation Planning & Policy Committee (SHMPPC), chaired by the former Deputy Secretary of Administration and comprised of Secretary- and Commissioner-level appointed staff to discuss

mitigation goals and policies at the decision-making level. The SHMPPC is addressed in more detail in [Planning Process](#) and [Plan Maintenance & Implementation](#) sections, while the SHMPRC is discussed in detail below.

State Hazard Mitigation Project Review Committee:

The State Hazard Mitigation Project Review Committee (SHMPRC) includes the following agencies and their representatives, if position specific: Vermont Emergency Management (SHMO), Agency of Natural Resources (State Floodplain Manager & State Geologist), Agency of Transportation, Department of Historic Preservation and two (2) Regional Planning Commission staff. This technical group is in charge of thorough review and scoring of all HMA applications submitted to VEM for consideration. In 2015, the SHMPRC met to revise the State's mitigation selection criteria to better reflect current mitigation strategies, goals and objectives across the State. In addition to these competitive criteria, the revised selection criteria also identified five threshold criteria that must be met for the committee to begin competitive scoring:

1. Is this a mitigation project (deferred maintenance is ineligible)?
2. Does the proposal conform to No Adverse Impact Standards in the State Flood Hazard Area & River Corridor Rule and the State Stream Alteration Rule, where relevant?
3. Does the community have a Local Hazard Mitigation Plan in place, or a commitment to write one?
4. Does the community have a Local Emergency Operations Plan in place?
5. Is the community in good standing with the National Flood Insurance Program?

Provided an application meets all of the above threshold criteria, the SHMPRC will then score the application based on 16 competitive criteria (see: [Appendix to Section 3](#)). These 16 criteria are broken out into four (4) topic areas:

- VI. Effectiveness:** assessment of technical feasibility, cost effectiveness and sufficiency, ability to implement and achieve the objective, consideration of climate change and overall intent (i.e. reduce or avoid vulnerability).
- VII. Impact:** assessment of the repetitive loss of the structure/location, the reduction in risk, and the project's impacts to the environment, economy and cultural/historic features.
- VIII. Proactivity:** assessment of the community's previous mitigation actions, policies and plans.
- IX. Unique Circumstances:** assessment of the project's special qualities, consideration of community support and whether the project demonstrates significant cost effectiveness.

The SHMPRC typically selects priority areas for mitigation grants based upon the following criteria:

- Repetitive loss areas as indicated by past history and documented prior losses
- Mitigation measures which remove vulnerability (e.g. acquisition/demolition, road relocation) versus those that only reduce vulnerability (e.g. structural elevation)
- Areas chronically affected by severe flooding, ice jams, River Corridor erosion, landslides and other natural disasters
- Areas within which river corridor protection strategies will most effectively mitigate future flood loss in comparison with other alternatives
- Strong benefit-cost ratio (i.e. greater than 1.0) in accordance with FEMA Benefit-Cost Analysis (BCA) guidelines
- Towns impacted by strong development pressures or otherwise demonstrating a critical or urgent mitigation need
- Communities traditionally underserved by State and Federal grant programs (e.g. small and impoverished communities)

- Measures that are commensurate with preserving the natural features of rivers, streams, mountain ranges, forests, open spaces and other aspects of the natural landscape (e.g. floodplain restoration)
- Local efforts to be proactive and ability to meet the 25% match requirement

The SHMPRC meets at least once annually for the non-disaster grant program application review, but will also be convened for separate meetings if HMGP funding is available to the State. The SHMO will send out all application materials to the SHMPRC at least one week prior to meeting to allow members to individually review applications before the more formal scoring process, the latter of which takes place at the in-person meeting.

Given the relatively small size of Vermont, overlap between projects, agencies and shared goals/priorities is significant. Accordingly, there is a significant amount of project coordination that takes place interagency to ensure that efficiencies in both goals and funding can be achieved. Those projects that are deemed to be priority projects for multiple State agencies typically score well with the SHMPRC and are better able to leverage multiple forms of resources and funding.

Hazard Mitigation Assistance Grant Lifecycle - Application Submittal, Implementation & Subgrant Closeout:

Applications that are deemed both eligible and competitive by the SHMPRC are then submitted by VEM to FEMA for funding consideration. All HMGP applications are sent both digitally and in hard copy to Region I, while PDM and FMA applications are submitted via the eGrants Mitigation Portal. During FEMA review of HMA applications, Requests for Information (RFIs) are submitted to the applicant (VEM), should the need for supplemental information arise.

Subapplicants are notified by VEM upon receipt of award from FEMA Region I. The Financial Administrator within the Department of Public Safety (DPS) tasked with Hazard Mitigation Assistance will develop subgrant agreements using both the FEMA-approved budgets and scopes of work, as well as the standard State of Vermont grant agreement provisions and requirements (see: [Appendix to Section 3](#)), which require signatures from authorized representatives of the subrecipients and the Department of Public Safety Commissioner or his/her designee prior to implementation of award.

Following execution of the subgrant agreement, subrecipients are able to carry out approved scopes of work. VEM mitigation staff are available for support during implementation, if needed or requested. Upon completion of a project, a closeout visit between VEM and the subrecipient is conducted to ensure conformance with the approved scope of work. VEM mitigation staff are then tasked with developing a subrecipient closeout package, which includes relevant photo documentation from the final site visit, a programmatic summary of the completed work, pertinent forms and documents (differ based on project type), and a financial summary of the project's budget details.

The specifics of the process by which VEM manages the HMGP following a declared disaster are identified within the State of Vermont HMGP Administration Plan, which is a document requiring update and approval by both VEM and FEMA Region I prior to disbursement of HMGP funds.

Table 8: HMGP Financial Summary: DR-1995 (April-May 2011) through DR-4232 (June 2016)

	TOTAL	Buyouts	Infrastructure	Planning	5% Initiative	Advanced Assistance
Lock-In Amount	\$41,026,478	--	--	\$2,871,854	\$2,051,324	--
Application Total (75%)	\$42,367,695	\$21,235,357	\$15,571,796	\$2,512,317	\$2,571,769	\$476,456
Approved	\$31,205,778	\$17,303,145	\$10,041,976	\$2,498,607	\$1,264,550	\$97,500
Pending	\$5,298,861	\$298,118	\$4,849,071	--	\$151,673	--
Total Remaining	\$8,124,206	--	--	\$301,018	-\$573,589	--

Table 9: HMGP Project Summary: DR-1995 (April-May 2011) through DR-4232 (June 2016)						<i>Financial (top) and project (bottom) summaries for all HMGP disasters in Vermont between April 2011 and June 2016; note that these tables do not include withdrawn or denied projects.</i>
Status	Buyout	Infrastructure	Planning	5% Initiative	Advanced Assistance	
Approved	73	69	22	7	1	
Pending	2	9	0	2	0	
<ul style="list-style-type: none">• Buyouts: 73 approved applications (135 properties); 2 pending applications (2 properties)• Infrastructure: 69 approved - 32 drainage, 9 elevations, 17 generators, 1 road relocation, 1 demolition (4 buildings), 9 floodproof/mitigation; 9 pending - 5 elevation, 1 generator, 3 floodproof/mitigation• Planning: 22 approved applications (142 towns & SHMP)• 5% Initiative: 7 approved - 2 projects, 2 plans, 3 buyouts (5 homes), 1 warning siren; 2 pending projects						

Public Assistance Program

The Public Assistance Program is administered in the State by Vermont Emergency Management's Recovery & Mitigation Section. The Recovery & Mitigation Section Chief oversees the Public Assistance (PA) Program, which is administered by the Public Assistance Officer (PAO).

In the event of a disaster, VEM will initiate the Local Liaison Procedure, whereby emergency management staff within each Regional Planning Commission (RPC) are activated to reach out to all of their municipalities for a status update on essential elements of information. Based on the information received in these reports, which are shared with and validated by pertinent sister agencies, VEM staff are able to conduct internal Initial Damage Assessments (IDAs), which are then shared with FEMA when requesting Preliminary Damage Assessments (PDAs). If the State believes it is close to or has exceeded the PA disaster threshold amount (it is during these PDAs that it is *critical* for potential applicants to request hazard mitigation opportunities through 406 funding in order to more effectively address long-term reduction in vulnerability to the damaged infrastructure), PA staff within VEM will develop a request for a federal disaster declaration, which is then submitted to FEMA Region I by the Governor.

Upon receipt of a federal disaster declaration, Applicant Briefings are held in affected areas to discuss the PA Program and provide technical assistance to municipalities. Project Worksheets (PWs) are developed by deployed FEMA personnel, which are then entered into the Emergency Management Mission Integrated Environment (EMMIE) system. FEMA Hazard Mitigation Assistance (HMA) staff use the data in EMMIE to develop Hazard Mitigation Grant Program (HMGP) "lock-in" letters, which are based on a percentage of the estimated total federal public assistance under the Stafford Act. VEM mitigation staff then use these lock-in letter amounts to determine approximate total share of HMGP funding under the disaster prior to convening the State Hazard Mitigation Project Review Committee (SHMPRC) to review applications for funding consideration (see: [Hazard Mitigation Assistance Program](#)).

Maps of Public Assistance expenditures by disaster are included in the relevant hazard sections: [Inundation Flooding & Fluvial Erosion](#), [Snow Storm & Ice Storm](#), and [Wind](#).

Emergency Relief and Assistance Fund (ERAF):

Prior to 2014, the Emergency Relief and Assistance Fund (ERAF) rule provided a default 12.5% State match to municipalities for Public Assistance projects following a federally-declared disaster, with an incentive to increase that State match to 17.5% for municipalities who had taken certain, proactive steps prior to the disaster. In January 2014, after consideration of the ERAF rule's efficacy in encouraging municipalities to be more proactive, the Secretary of Administration sent a letter to all municipal officials in Vermont notifying them of new changes in incentives, which would go into effect in October 2014 (see: [Appendix to Section 3](#)). These changes are incorporated into the current iteration of the ERAF rule, which is still in effect as of the date of this Plan. Currently, the default for State match following a declared disaster is 7.5%, with 17.5% covered by municipalities receiving Public Assistance funding. In order to achieve 12.5% match status, a municipality must meet the following requirements:

1. Participate in the National Flood Insurance Program (NFIP)
2. Adopt Town Road and Bridge Standards that meet or exceed the 2013 template¹
3. Adopt a Local Emergency Operations Plan (LEOP) annually after Town Meeting Day and before May 1
4. Submit a Local Hazard Mitigation Plan (LHMP) to Vermont Emergency Management for review

For municipalities that wish to decrease their required match to 7.5%, thereby increasing the State match to 17.5%, the one of the following must be met²:

5. Adoption of River Corridor bylaws
6. Enrollment in the National Flood Insurance Program's (NFIP) Community Rating System (CRS), whereby the community must earn credit under Activity 430

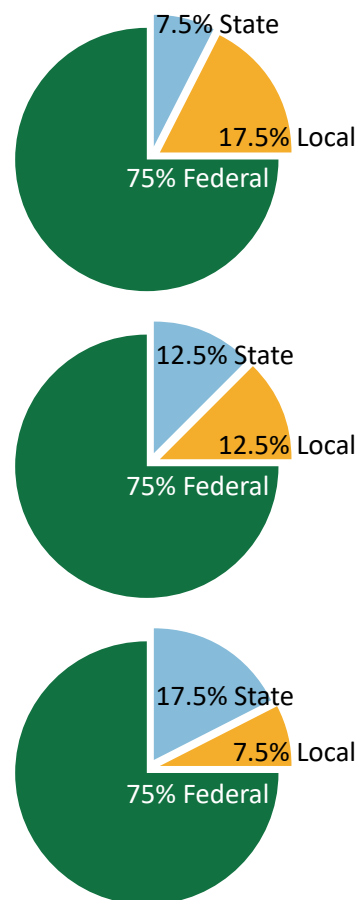


Figure 9: Vermont Emergency Relief & Assistance Fund rates

The intent of the ERAF rule is to encourage municipalities to take action to improve their community's resilience to future disaster impacts before the next event, which will save taxpayer expenses over time.

Municipalities can access information regarding their current ERAF status through their community reports, located online at <http://floodready.vermont.gov> (colloquially referred to as "FloodReady"), a website maintained by the Department of Environmental Conservation (DEC). Thirty (30) days after the date of the disaster declaration, Vermont Emergency Management (VEM) Public Assistance staff will take a snapshot of the community reports on FloodReady, which is then used to determine the State match rate for municipalities seeking Public Assistance. It is important to note that this is the process that is currently followed for all federally-declared disasters in Vermont, regardless of disaster type.

As nearly four years have passed since the current ERAF rule went into effect, this Plan identifies review of the efficacy of ERAF, including potential revision to the rule, as a top priority mitigation strategy (see: [Mitigation Strategy](#)).

1 <http://vtrans.vermont.gov/sites/aot/files/operations/TheOrangeBook.pdf>

2 http://floodready.vermont.gov/sites/floodready/files/documents/ERAF_Criteria_17%20to%25_June2018.pdf

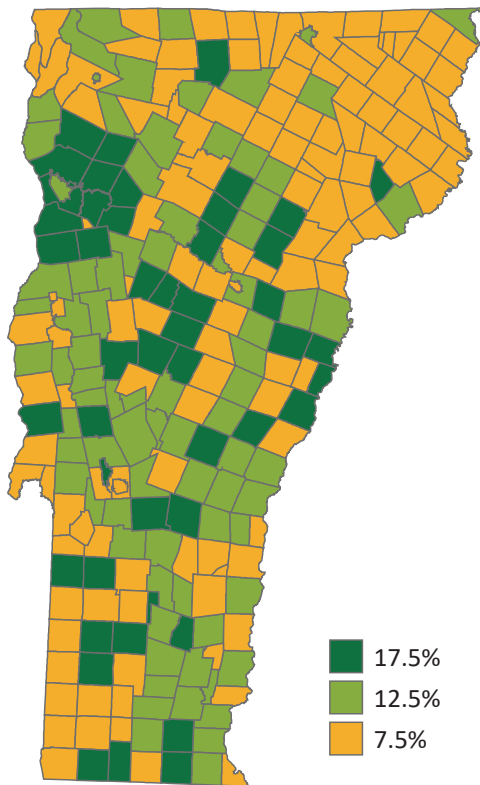


Figure 10: ERAF rate map by municipality
(September 10, 2018)
Data Source: <http://floodready.vermont.gov>

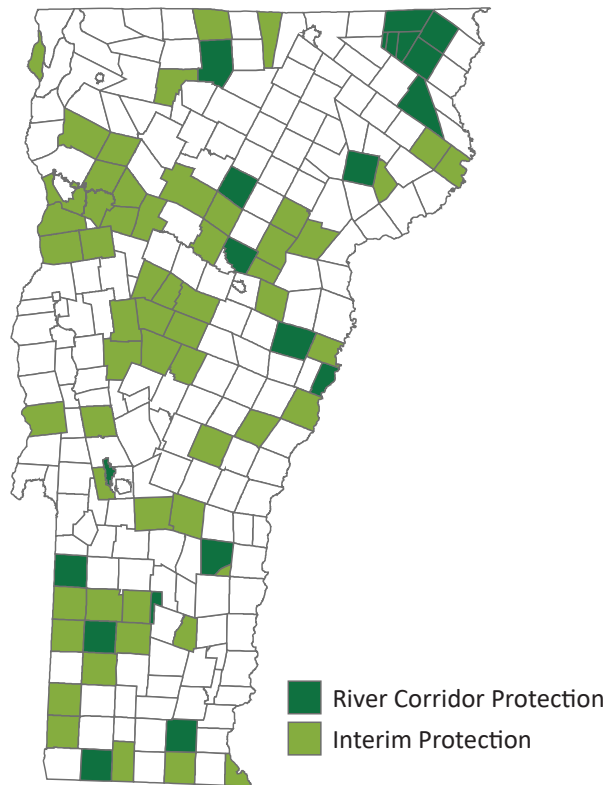


Figure 11: Map of Vermont municipalities with current and
interim River Corridor Protections (May 31, 2018)
Data Source: <http://floodready.vermont.gov>

Vermont Stream Alteration General Permit (SAGP) Revision:

A notable advancement in hazard mitigation during the past few years has been the revision of Vermont's Stream Alteration General Permit (SAGP), and FEMA's subsequent recognition of the new general permit as "codes and standards" for purposes of future Public Assistance repairs (in a letter 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 Public Assistance funding under Section 406 hazard mitigation of the Stafford Act. 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 and do not require prior approval by FEMA before construction, which is otherwise required for 406 hazard mitigation projects. Prior to construction, applicable projects may still need to go through the environmental planning and historic preservation (EHP) review process.

Culverts destroyed in DR-4330 were replaced based on codes and standards in Warren, Granville (3), Waterford, and Wallingford. Culverts destroyed in DR-4356, a severe storm and flooding event on October 29-30, 2018, are being replaced based on codes and standards in Dover and Halifax.

This significant improvement allows Vermont to more quickly and appropriately address vulnerable infrastructure in a more sustainable way than has typically been implemented during the immediate response and recovery phase following a disaster.

New Capabilities from 2018 SHMP Planning Grant Sub-Projects

As part of Vermont Emergency Management's Hazard Mitigation Grant Program (HMGP) application to develop the 2018 State Hazard Mitigation Plan, the Agency of Natural Resources (ANR), Agency of Transportation (VTrans) and Buildings & General Services (BGS) developed three sub-projects considered to be essential for hazard mitigation planning at the State level. These projects considered vulnerability of the State to fluvial erosion through a robust mapping effort (ANR), vulnerability of the State's infrastructure to inundation flooding and fluvial erosion through an innovative web-based application (VTrans), and vulnerability of State-owned and -leased buildings to inundation flooding and fluvial erosion through an inventory and risk assessment process (BGS). Each of these projects, funded in part through FEMA's HMGP, have resulted in new data and tools that improve Vermont's ability to address vulnerability, and are explained in more detail below.

ANR Project - Statewide River Corridors Risk Analysis and Hazard Mitigation Prioritization Tool:

ANR modified Vermont's Statewide River Corridor Base Map to develop the map as a risk analysis, mitigation and conservation prioritization tool for use by State, regional, and local governments to better understand fluvial erosion risks and identify specific mitigation and conservation actions for reducing risk in the most vulnerable locations.

In conjunction with the map updates, ANR developed local-attribution procedures for use with the new Statewide River Corridor layer. Pilot projects were completed and draft guidance was developed for creating municipal hazard mitigation project tables and working with municipalities to do administrative changes to the statewide river corridor map. Following the pilots, all eleven Regional Planning Commissions (RPCs) worked with two municipalities within their region to complete Project Readiness Workbooks.

Using the template project table created by this project, ANR, RPCs and VEM will endeavor to expand project tables to all municipalities, which will aid in their mitigation and capital improvement planning efforts. In connecting the project tables with Local Hazard Mitigation Plans (LHMPs), development of grant applications and access to funding will be more swift, and the likelihood of reducing vulnerability will increase.

More information on this project, the planning process and the tools developed can be found in [Appendix to Section 3](#).

VTrans Project- Transportation Flood Resilience Planning Tool (TRPT):

The Transportation Flood Resilience Planning Tool (TRPT) is a web-based application that identifies bridges, culverts and road embankments that are vulnerable to damage from floods. The tool also estimates risk based on both the vulnerability and criticality of roadway segments and identifies potential mitigation measures based on the factors driving vulnerability. A thorough list of potential mitigation project types was incorporated into the tool's algorithm, which can be used for all road segments in one of the three pilot watersheds. Those mitigation measures that are most feasible, have the highest impact and are the most cost-effective are then displayed for local, regional and State planners to consider.

The TRPT was developed and tested in three pilot watersheds (headwaters of the White River, the Whetstone Brook, and the North Branch of the Deerfield River) and is ready to be applied throughout Vermont to inform project scoping, capital programming and hazard mitigation planning. Since the TRPT web application is now considered complete, new data from other watersheds can be folded into the tool, which is available to the public³. Documentation is under development and will provide the details on how to upload new vulnerability and criticality data to the TRPT.

This Plan identifies expansion of the TRPT to all watersheds across Vermont as a top priority (see: [Mitigation Strategy](#)). After discussions with several State partners, it was also determined that the algorithms used to develop the TRPT can be applied to other critical infrastructure, such as utilities, to more comprehensively understand Vermont's vulnerability to hazards and develop a list of potential mitigation measures that can be implemented to reduce vulnerability. More information on this project, the planning process and the tools developed can be found in [Appendix to Section 3](#).

BGS Project - State Facility Inventory and Assessment:

Many facilities and buildings owned by the State of Vermont are located in flood hazard areas where they face significant risk of flood damage from inundation and erosion. Between 2016 and 2018, the Vermont Department of Buildings and General Services (BGS) oversaw a vulnerability assessment of all State buildings in order to determine which are the most vulnerable to flood hazards. Those buildings that are significantly vulnerable and that play a critical role in the functioning of State government were prioritized for further assessment through field surveys. Specific mitigation strategies to lessen those risks were then developed for priority buildings, which also considered an assessment of the benefits and costs of implementation. Implementing the recommended, cost-effective strategies for these high priority buildings has been identified as an action in this Plan (see: [Mitigation Strategy](#)).

The BGS building inventory tool will serve State planners in prioritizing flood mitigation efforts for existing structures. Having access to an accurate BGS inventory will result in more disaster resilient buildings that will significantly reduce or eliminate future damages from natural disasters. In addition, the resulting prioritized list of mitigation projects can be used to develop grant applications for Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Program (HMGP) funding, as well as existing State resources, and will support capital budget planning in all agencies with State building assets. More information on this project, the planning process and the tools developed can be found in [Appendix to Section 3](#).

LOCAL CAPABILITIES

Local municipalities have the greatest authority to implement comprehensive hazard mitigation programs for their community. Title 24 Chapter 117 clearly articulates that the right to determine which ordinances and bylaws will be adopted, what is included in those local regulations, and what is included in municipal plans rest largely with the local community. State agencies can suggest that certain provisions be incorporated into local regulations, and Act 250 and the NFIP provide State and Federal influence; however, the towns typically develop their own rules for development and land use, including in flood and erosion hazard areas. Towns are also responsible for issuance and review of municipal permits for compliance with their own municipal bylaws. Some municipalities in Vermont still choose to have no zoning. All Vermont communities have the option to develop and adopt different kinds of plans, including comprehensive plans, capital improvement plans, economic development plans, emergency operations/response plans, continuity of operations plans, and Local Hazard Mitigation Plans (LHMPs). Vermont municipalities have the power to levy taxes and assessments for

3 <http://vtrans.stone-env.net/#/map>

Table 10: Flood Ready Report Categories

Number of buildings in the Special Flood Hazard Area (SFHA)
Flood insurance policies in SFHA (Zone A, AE, AO, A 1- 30)
Percent of buildings in the SFHA with flood insurance
Number of critical or public structures in SFHA or 0.2% flood hazard area
Percent of buildings in the SFHA
National Flood Insurance Program (NFIP) Enrollment Date
Flood Insurance Rate Map Standard (Digital FIRM, Rough Digital, Paper)
Community Rating System (CRS) participation
Local Hazard Mitigation Plan (LHMP) status
River Corridor Protection status
Municipal Plan status
Zoning Adoption / Amendment Date
Hazard Area Regulation Adoption / Amendment Date
2013 Road and Bridge Standards adoption

special purposes. All of these authorities have, or potentially could have, an impact on local hazard mitigation.

More information on local capabilities by community can be easily found in the Community Reports available on Vermont's Flood Ready website⁴ by community (Table 10).

Regional Planning Commissions:

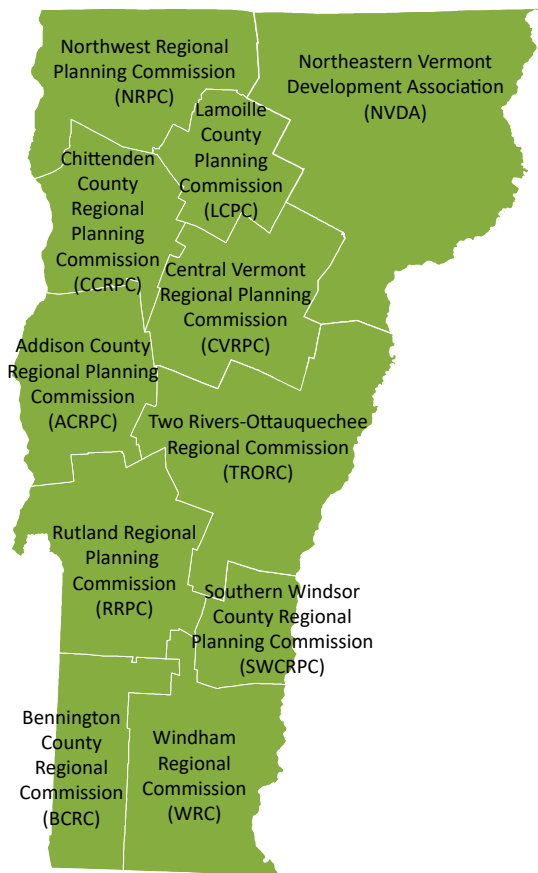


Figure 12: Vermont's 11 Regional Planning Commissions map
For information on the RPCs and their towns, see www.vapda.org

Vermont's eleven Regional Planning Commissions (RPCs) were created by statute as nonprofit political subdivisions of the State (Figure 12) 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.

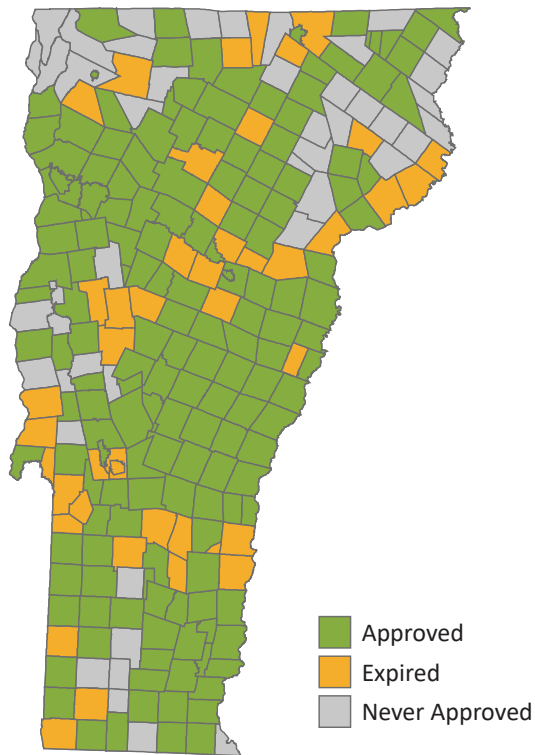
The RPCs and local communities are in the best position to determine their own mitigation needs; therefore, the State relies on these entities to provide information to advance mitigation goals and priorities. Through a collaborative arrangement, VEM, RPCs, and towns identify and prioritize local mitigation 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 floodplain ordinances, complete paperwork required for NFIP membership, and provide direct grant writing and administrative assistance to local town officials to help implement HMGP mitigation projects.

Given the rural nature of Vermont's communities, town 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.

Local Hazard Mitigation Planning

Local and State mitigation efforts are closely coordinated and integrated for project and planning purposes. Being a small state works to Vermont's advantage when bringing together the various regions, as they often share common vulnerabilities and challenges, as well as goals and initiatives pertaining to hazard mitigation.



In Vermont, the majority of Local Hazard Mitigation Plans (LHMPs) are developed by the RPCs. The State Hazard Mitigation Officer and Hazard Mitigation Planner at VEM work closely with RPCs and their municipalities, providing technical support in local hazard mitigation planning. In coordination with VTrans and ANR, VEM assists the RPCs in identifying potential vulnerabilities, such as roadway infrastructure located within designated flood or landslide hazard areas, and developing mitigation activities that can then be prioritized.

As of September 10, 2018 Vermont had:

- 179 (63.7%) Approved LHMPs
- 50 (17.8%) Expired LHMPs
- 52 (18.5%) Municipalities that have never had an approved LHMP

At the same time, 200 municipalities (71.2%) met the ERAF requirement of having an LHMP, meaning those communities either had a currently-approved LHMP or a draft LHMP somewhere in the State or Federal review process.

Figure 13: Local Hazard Mitigation Plan status by municipality map (September 10, 2018)

Data Source: <http://floodready.vermont.gov>

Local Hazard Mitigation Plan Review Process:

- The local community, a consultant, or the RPC develop the LHMP. Plan developers are encouraged to contact the VEM Hazard Mitigation Planner during the plan development process for any technical assistance needs or to review components of the LHMP as it is being developed.
- Once a draft is completed, the LHMP and FEMA Review Tool⁵ are submitted to the Hazard Mitigation Planner for review, who typically returns LHMPs within two weeks of receipt with comments on how to meet the FEMA requirements. The Hazard Mitigation Planner is available to answer questions or meet with the plan developer to review comments.
- Once the plan developer has completed any necessary revisions, the plan is submitted back into State review. If all requirements are met, the LHMP is submitted by the State to FEMA.
- LHMPs are typically returned from FEMA to the State within the required 45-day review period, either with required revisions noted in the review, or to notify the State that the plan is Approvable Pending Adoption (APA).
- If a plan is returned with required revisions, the Hazard Mitigation Planner adds notes within the Review Tool with additional guidance on how to meet the FEMA requirements and returns the Review Tool to the plan developer. Again, the Hazard Mitigation Planner is available to answer questions or meet with the plan developer to review comments.

5 https://www.fema.gov/media-library-data/20130726-1809-25045-7498/plan_review_guide_final_9_30_11.pdf

- When a plan receives APA status from FEMA, the plan developer makes any remaining necessary updates and works with the local jurisdiction to adopt the LHMP.
- Following local adoption, the plan developer submits the final plan to the State. VEM will verify that any necessary revisions have been made and then submit the plan to FEMA for formal approval.
- FEMA then formally approves the LHMP and sends the approval letter to VEM. The community then has five years from the date of FEMA approval to implement the LHMP before the plan expires and an updated plan is due for approval.

Funding & Development of Local Hazard Mitigation Plans:

VEM works with each RPC and their municipalities to develop LHMPs across the State. Until recently, municipalities within an RPC area would develop local annexes that identified town-specific policy recommendations and mitigation capital improvements, which would then be added to a larger, multi-jurisdictional mitigation plan. These multi-jurisdictional planning efforts were largely funded using PDM planning grants that were matched with State planning dollars. In addition, VEM has also provided financial assistance in plan development to RPCs through the Emergency Management Performance Grant (EMPG) that the RPCs match with other State planning funds and local, in-kind resources.

Today, RPCs, as the lead LHMP developers in Vermont, typically approach LHMPs as single-jurisdictional documents. This shift in process is largely due to plan expiration issues, as the 5-year expiration clock begins on the date that the first municipality receives formal approval from FEMA. Other municipalities who may require time to edit or adopt their plan are then left with a shorter shelf-life. The one RPC that is still producing a multi-jurisdictional plan is the Chittenden County Region Planning Commission (CCRPC), which completed a county-wide multi-jurisdictional LHMP in 2017.

RPCs now receive funding for updating and developing LHMP through FEMA's PDM and HMGP, VEM and the local towns. Several communities are still developing LHMPs as part of a large DR-4022 planning grant that was awarded in 2014 to develop 102 LHMPs across Vermont. A 2017 PDM planning grant is currently under review to fund LHMPs for 16 municipalities.

Funding LHMP development with FEMA mitigation grants has been a challenge in Vermont. Historically, RPCs would apply for funding as subrecipients and develop LHMPs for their municipalities. In 2014, FEMA Region I notified VEM that subrecipients would be unable to cover indirect rates, and as planning efforts are largely indirect, RPCs were unable to cover a significant amount of their true cost in assisting Vermont's rural communities with LHMP development. Though the Department of Public Safety was able to fund the 25% match under the DR-4022 planning grant for 102 LHMPs as a result of the indirect rate issue, future applications for federal funding to develop LHMPs will require match from alternative sources.

VEM continues to seek resolution to the indirect rate issue in order to ensure that communities are covered by LHMPs. Accordingly, determining an appropriate way to fund mitigation planning in Vermont was developed as a strategy in this Plan (see: [Mitigation Strategy](#)).

Local Hazard Mitigation Plan Coordination & Barriers:

RPCs develop LHMPs that are tailored to address local needs. Given the partnership between VEM and the RPCs, regional involvement in the SHMP update process was significant, which allowed for careful consideration and incorporation of LHMPs into this Plan (see: [Planning Process](#)). Technical assistance and training is also provided by VEM mitigation staff on LHMP development to RPCs as well as direct assistance to communities developing LHMPs without the support of their RPC.

Recognizing that climate change is likely to increase the frequency and severity of a number of Vermont's hazards, VEM strongly encourages local mitigation planning processes to consider climate change impacts and actions when developing LHMPs. Climate change is a critical factor to consider when assessing future hazard vulnerability and developing mitigation and resilience strategies, which should be reflected in LHMPs. Impacts of climate change on natural hazards are addressed in the [Vermont Profile & Hazard Assessment](#).

Vermont continues to discuss opportunities to integrate LHMPs into the town planning process. Unfortunately, many small, rural towns in Vermont find it challenging to develop both a town plan and an LHMP, even with assistance from the RPC. Coordination of municipal development plans and LHMPs is also encouraged through 24 V.S.A. 117, the Vermont Planning and Development Act, which requires town plans to include a flood resilience element. Additionally, FEMA's review of LHMPs includes a component addressing how the LHMP will be integrated into other municipal planning efforts.

From an RPC survey developed as part of this SHMP update, the majority of RPCs noted that the LHMP is tied in with other planning mechanisms by reference only or through specific technical assistance from the RPC due to their involvement in municipal planning processes. In the same survey, RPCs noted that their most significant challenges to developing LHMPs included:

- Lack of municipal capacity or interest
- Redundancy and lack of coordination with other planning activities
- Finding data on town-specific historical occurrences
- Insufficient public participation
- Lack of sufficient funding to develop plans
- Overly prescriptive FEMA requirements
- FEMA review process and timing for LHMP review
- Developing mitigation actions
- Lack of a Vermont data repository

These barriers were discussed during SHMP 2018 action development and are addressed through the following SHMP actions, which have been included to better integrate local planning efforts with State mitigation planning, under the objective to improve local hazard mitigation planning:

- Create a working group to assess statutory updates to the municipal planning requirements to better coordinate municipal plans and local hazard mitigation plans.
- Develop a model of an integrated municipal plan and local hazard mitigation plan that meets the requirements of both planning processes.
- Create intuitive Local Hazard Mitigation Plan templates (single and multi-jurisdictional) and development resources, including local engagement tools.
- Develop a Vermont-based potential mitigation actions list for Local Hazard Mitigation Plans from the findings of the ANR subgrant.
- Host annual or biannual Local Hazard Mitigation Planning workshops and skill-shares.
- Request approval from FEMA to participate in Program Admin by State to expedite Local Hazard Mitigation Plan (LHMP) approvals.
- Support RPCs in implementing municipal hazard mitigation project tables developed through the ANR subgrant (bake into annual work plans from ANR and VEM funding).

Additionally, many of the actions under the education and outreach goal would benefit plan development by providing resources for RPCs and local communities around mitigation.

Local Hazard Mitigation Plan Review for SHMP:

In addition to the significant stakeholder engagement process to develop the 2018 SHMP, which included participation from 10 of Vermont's 11 RPCs and several municipalities (see: [Planning Process](#)), all approved LHMPs were reviewed by VEM staff to inform Plan development. The review process began in early 2017 and ended in early 2018, including all 170 LHMPs that were FEMA-approved as of December 31, 2017. LHMPs were assessed for the hazards they addressed, vulnerabilities, local capabilities, mitigation strategies, overall plan priorities, and changes in development, which were tracked and summarized. Prior to the first Steering Committee meeting in May 2017, all LHMPs that were approved as of April 2017 were reviewed and summary information was made available for consideration at this Steering Committee meeting and future meetings, where applicable. Once additional LHMPs were approved, they were added to the tracking lists and summaries.

Since hazards are categorized similarly across communities, this was the simplest metric to accurately summarize. For the summary table of hazards addressed in LHMPs, see: [Hazard Assessment](#). Most plans develop priorities around reducing vulnerability to their most significant hazards, making the hazard assessment relevant for priorities as well. The summary of hazards addressed was reviewed and considered by the Steering Committee during the development of the risk assessment (see: [Planning Process](#)).

How vulnerability is addressed in LHMPs varies significantly between communities. Overall, infrastructure challenges and vulnerability due to power outages from flooding, ice, wind, or snow events emerged as the most significant vulnerabilities addressed in Vermont LHMPs. These vulnerabilities translate to the mitigation actions most often included by communities to upgrade infrastructure (i.e. culvert upsizing or bridge replacement, drainage and ditching projects, and road improvements) and to install generators in critical facilities. Several of the more recent plans have also included actions in support of water quality work happening throughout the State, including riparian plantings and land conservation. Connecting mitigation and water quality work is a priority action of this Plan (see: [Mitigation Strategy](#)).

Many non-mitigation actions are often included in LHMPs as well, including tree trimming around power lines to prevent outages, alert systems for residents during events, shelter development, and education for residents on preparedness. While support for these efforts is not directly called out in Plan actions, many of the actions under the education and outreach goal would assist with these efforts.

Development of mitigation actions has been recognized as a challenge for Vermont communities. Several actions developed for this Plan are also intended to help communities develop better mitigation actions at the local level, such as expansion of the VTrans transportation resilience app, incorporation of project tables from the ANR subgrant into LHMPs, and development of a Vermont-specific list of potential mitigation actions. Many actions within the Plan are intended to more broadly improve support for local communities in mitigation planning and project development, including several tools and resources for LHMP development.

In terms of local capabilities, LHMPs predominately assess the efficacy of their Selectboard, Planning Commission, Zoning Administrator, Emergency Management Director or Coordinator, Town Clerk or other municipal staff or boards (if applicable), Municipal Plan, Capital Budgeting Plan, Local Emergency Operations Plan (LEOP), and NFIP compliance. Overall, these capabilities are functioning to maintain current efforts; however, undertaking more significant mitigation action can strain many Vermont communities. See comments above on the barriers Vermont municipalities face when applying for grants under HMA and developing LHMPs.

National Flood Insurance Program (NFIP)

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 regulations⁶. Though a federal program, the 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 Vermont⁷. 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 the 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) rule⁸ went into 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: Browns River in Underhill demonstrates the true vulnerability (i.e. River Corridor area) versus the FEMA-mapped vulnerability (DFIRM Flood Hazard Area)

6 <https://www.fema.gov/national-flood-insurance-program>

7 <http://dec.vermont.gov/watershed/rivers/river-corridor-and-floodplain-protection/floodplain-managers>

8 <http://dec.vermont.gov/sites/dec/files/documents/wsmd-fha-and-rc-rule-adopted-2014-10-24.pdf>

In addition to providing insurance, the 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 the 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](#).

The 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 the 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 federal (NFIP) minimum standards and more appropriately address Vermont communities' risk to flooding. The 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 standards⁹. 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 31, 2018, 86 communities have adopted a combination of higher inundation and erosion standards.

As of May 31, 2018, 88% of Vermont communities participate in the NFIP (Figure 15) and most of those non-participating communities are in very low population areas with limited social capital or have limited mapping products available. Since the previous Plan was adopted in November 2013, six communities have joined the NFIP, while thirty communities remain non-participatory.

Based on current best available data in Vermont, around 8,000 structures are already exposed to flooding with a 1% annual chance or greater. Of these structures, 3,669 carry flood insurance and of those, 2,167 (or 27%) are located within high risk Flood Hazard Areas.

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](#).

9 http://dec.vermont.gov/sites/dec/files/wsm/rivers/docs/rv_ModelFloodHazardBylaws_HigherStandardsCrosswalk_2018.pdf

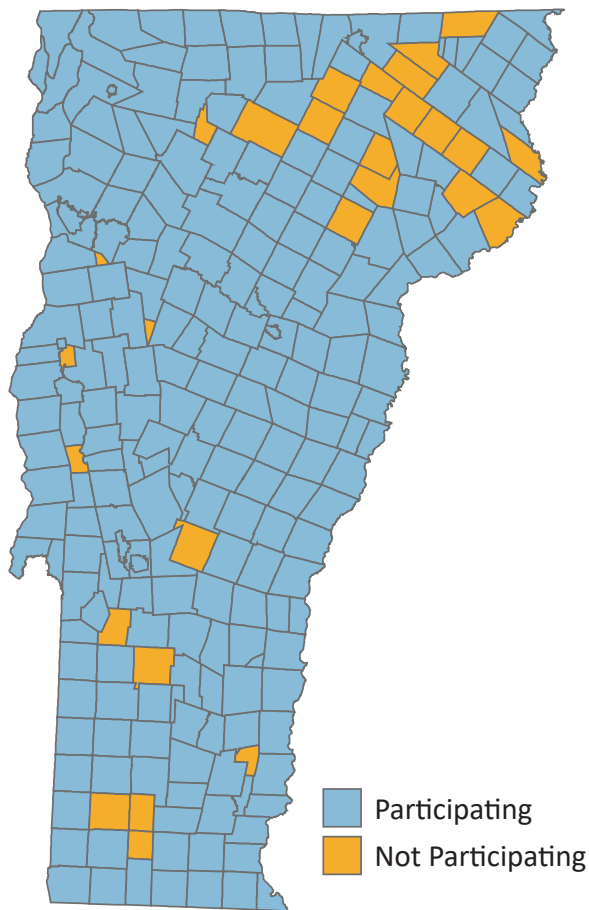


Figure 15: NFIP participation by municipality map (May 31, 2018)
Data Source: <http://floodready.vermont.gov>

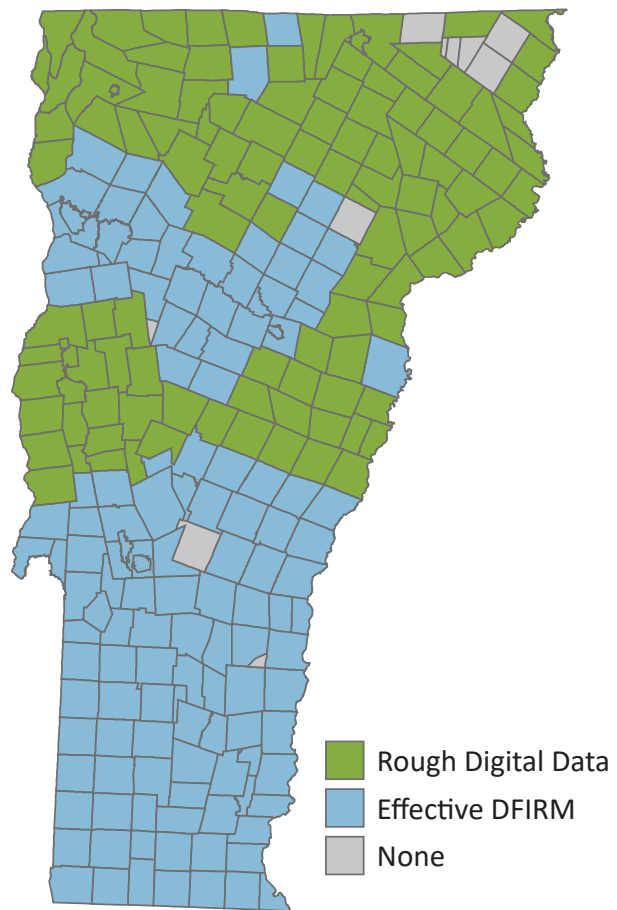


Figure 16: Risk Map status by municipality map (May 31, 2018)
Data Source: <http://floodready.vermont.gov>

Risk Mapping, Assessment and Planning (Risk MAP):

FEMA began updating Flood Insurance Studies and providing digital FIRMs (DFIRMS) in 2005 through its Map Modernization and Risk MAP programs. DFIRM data is 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). In 2017, FEMA Region I and the U.S. Geological Survey initiated the restudy of flooding sources in Franklin and Orleans counties and co-hosted Risk MAP discovery meetings in St. Albans, Enosburg, and Newport, with the ultimate goal of updating the FIS and FIRM data. Though these data will likely not be available for several years given ongoing uncertainty with respect to FEMA's annual mapping budget, digitizing Vermont's flood hazards is considered imperative for all watersheds/counties.

Vermont now has statewide LiDAR coverage and looks forward to scheduling additional map updates with FEMA as soon and funding is made available. In addition, Vermont may be interested in piloting FIS and FIRM updates through the Cooperating Technical Partners (CTP) Program. The Region 1 CTP budget has largely been insignificant in recent years and there has not been enough Risk MAP activity for DEC to pursue program management funding. Should Region 1 dedicate more funding to the CTP program, the NFIP Coordinator is interested in exploring CTP opportunities to update Vermont's large percentage of antiquated FIRMs.

DFIRM data are readily available through the ANR Natural Resources Atlas web mapping application¹⁰.

¹⁰ <http://anrmaps.vermont.gov/websites/anra/>

Community Rating System:

A voluntary incentive program under the NFIP, the Community Rating System (CRS) recognizes and encourages proactive floodplain management activities that exceed the minimum NFIP requirements¹¹. Communities that apply for and are admitted into the 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 the CRS are to reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

Since the 2013 SHMP, three new communities have joined the CRS in Vermont. As of October 2017, Vermont has six CRS-participating communities, four of which meet the Class 9 standards (Waterbury, Montpelier, Berlin and Bennington) and two that have achieved Class 8 status (Colchester and Brattleboro)¹².

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 the 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 is extraordinarily difficult.

11 <https://www.fema.gov/national-flood-insurance-program-community-rating-system>

12 https://crsresources.org/files/100/maps/states/vermont_crs_map_october_2017.pdf